

NOVEMBER 25, 1961

# Chemical Week

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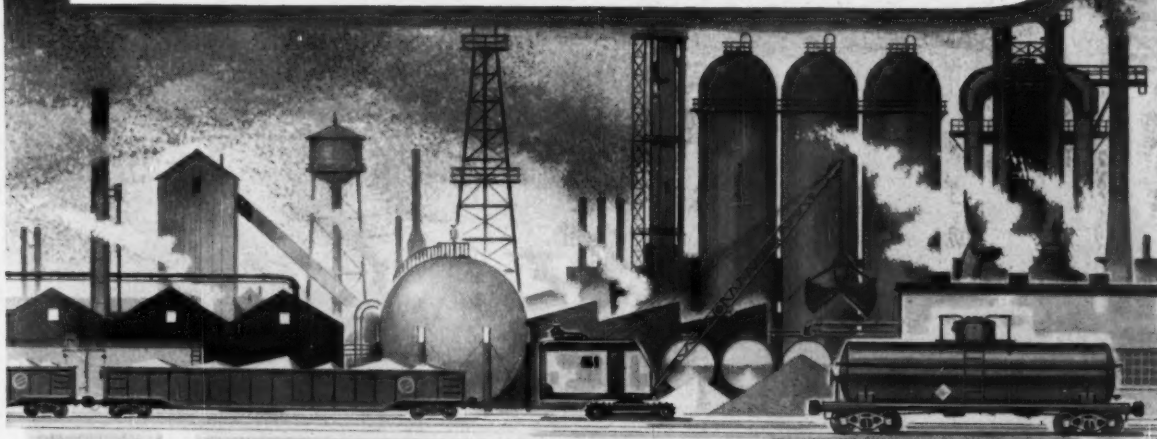
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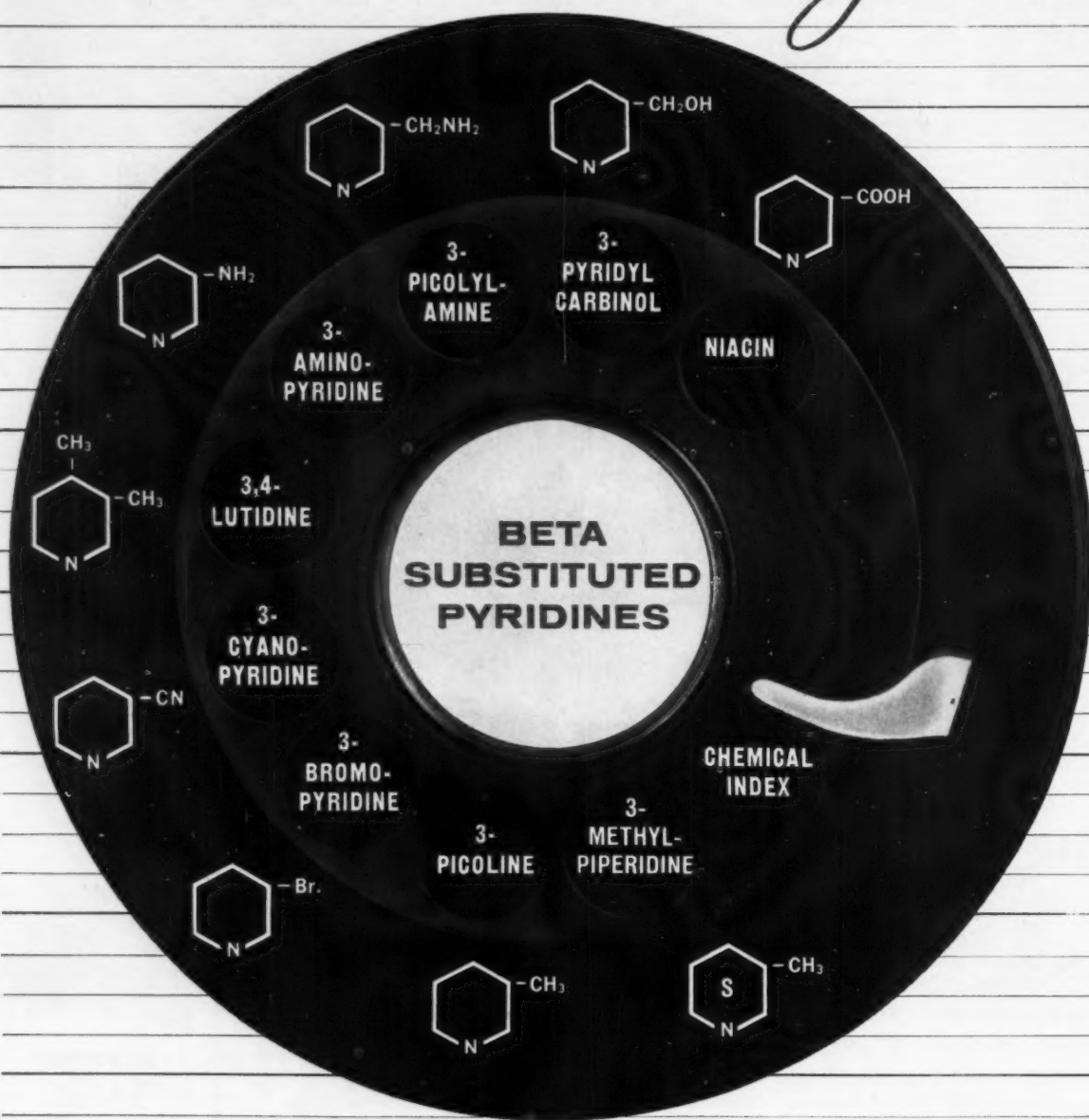
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ON THE COVER: Taking shape in the big, well-equipped shops of Japan's equipment makers: a strong contender for leadership in world chemical contracting (see p. 66).



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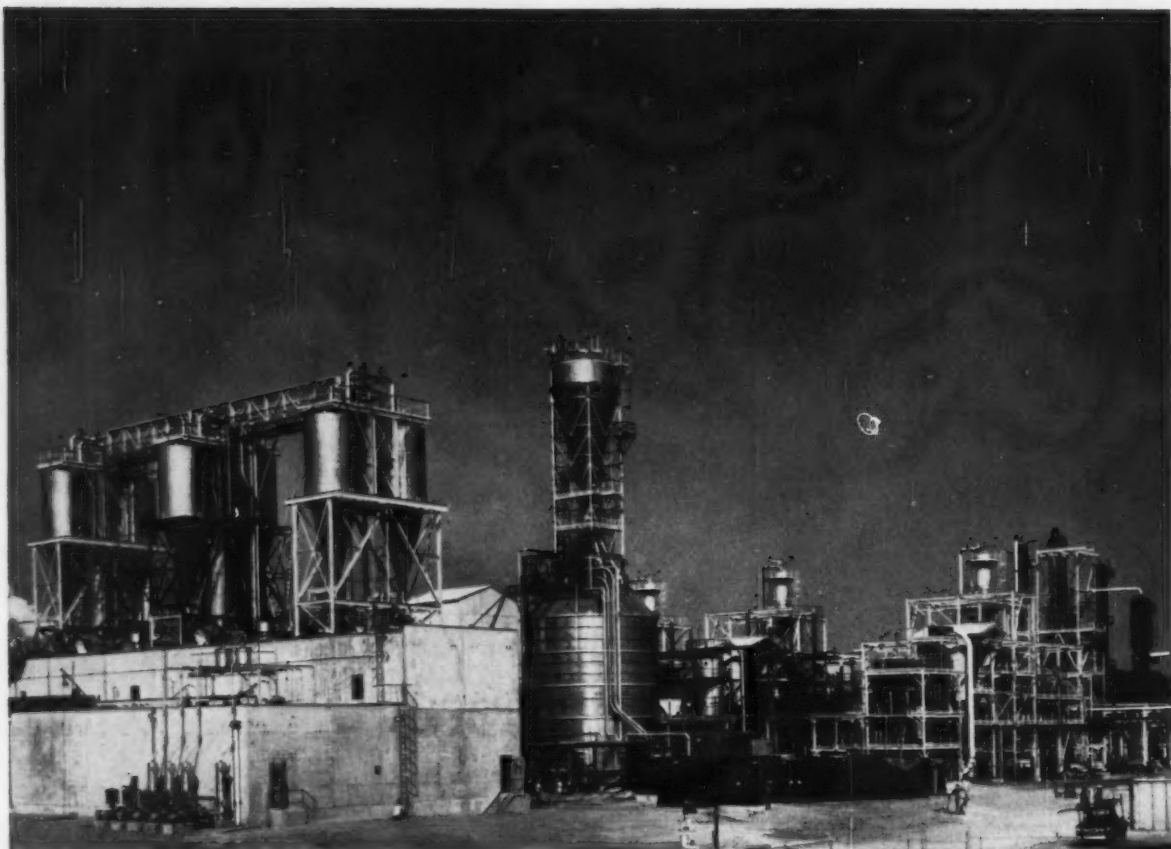
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## Needed: Less Price Pressure

WHATEVER THE REASON, irresistible pressure on suppliers for disastrously low prices is letting up. Moreover, industry leaders are now willing to talk about price policies and the effects of overcapacity.

One major chemical company is, like most companies, both a supplier of, and a customer for, chemicals. Its sales manager says that two of his large West Coast accounts are worried enough about the long-range consequences of lower prices that they are deliberately not crowding him for reductions. That doesn't mean that they won't take lower prices if offered, but they don't want to be parties to forcing a price break. The sales manager points out that as long as these major accounts aren't pushing, he can tell smaller accounts that, if they are offered lower prices elsewhere, he won't match the offer.

Coincidentally, the chairman of this same company (now in the role of customer) has asked a supplier whether it would make a profit at the quoted price for a raw material. On being told no, he defied his basic instincts by suggesting a higher price. If more of this were done, he believes, the profit problem would become far less acute.

Many price cuts are beneficial, of course. It is the historical pattern in our industry that as processes are improved and capacity increased, savings are passed along to the customer—not out of philanthropy, but in expectation that markets will be broadened and total profits augmented.

But not all cuts are in this category. If the market is not thereby broadened, and a producer simply uses price as a knife to cut a larger share of the pie, then other producers are forced to follow suit and nobody wins. The consumer benefits temporarily, but if the pattern persists he will be pocketing the money that the producer would invest to give him an improved product. Innovation would cease, and the chemical industry would become brother to the grocery business.

There's an old, old story about the miser who bought an expensive race horse because he expected to win some purses with it. But in his avarice he begrudged the high cost of oats. So he cut the ration down little by little, day by day, and was proud of himself for his canniness—until the horse died.

The moral is obviously clear to the above-mentioned companies. They have foregone the immediate selfish advantage for the continued health of the industry—recognizing that while they are customers for some products, they are suppliers of others.

Some months ago (*Viewpoint*, Aug. 26) we said, "There have been many calls for 'industrial statesmanship,' but what does it mean? When a salesman and a purchasing agent are dickering over a carload, philosophy seems less important than getting the order."

Perhaps we were too cynical. If these straws in the wind are any indication, a fresh breeze of statesmanship is sweeping over the industry.

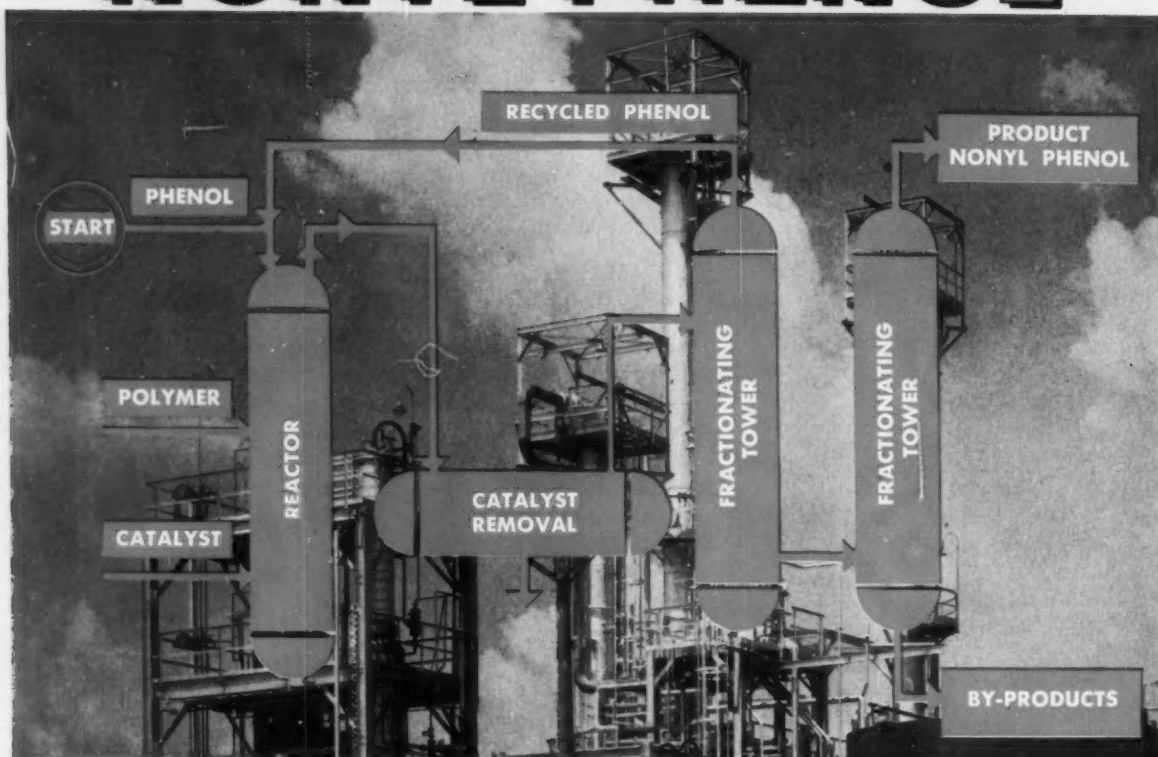
But this breeze must be fanned by top management, and not left to the purchasing agent. Unless otherwise directed, his role is clear; to buy what is required at the lowest possible price. Indeed, he has cause to fear for his job if his competitors buy cheaper. He cannot, on his own responsibility, commit his company's funds to the salvation of his suppliers.

Top management men, however, taking a broader view of their responsibilities—not only to their company, but to the industry and to society—can in good conscience make such commitments. We hope they do.



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3500 kc, 23°C.....	5.0



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# JEFFERSON CHEMICALS



## LETTERS

### Order-Takers vs. Salesmen

TO THE EDITOR: [Re] your Viewpoint article (Sept. 30, p. 7). . . .

While I would hesitate to accuse CHEMICAL WEEK of inciting foolishness as charged, I do have a theory of my own.

For quite a number of years after the war, emphasis was on production since it seemed hard to keep up with demand. Therefore the era trained few salesmen and managers, but did produce many order-takers.

In fact, for a few years when one of my duties was managing chemical sales, I was a very successful order-taker; all of our production was sold. Today, I value that experience and the friends and acquaintances made, but I never became a "salesman" with the skills and knowledge implied.

My theory is that a whole generation of sales management and general management has matured to responsible and influential positions without ever benefiting from appropriate experience or apprenticeship.

No wonder that the advent of competitive business is so bewildering and the response thereto so inept.

W. K. JACKSON

Vickers Refining Co.

Division of Vickers Petroleum Co., Inc.

Wichita, Kan.

TO THE EDITOR: Your editorial on pricing (Sept. 30, p. 7) was particularly stimulating, and undoubtedly by now your anonymous critic has been rebutted by a number of those affected. In our own company, I believe the record on forecasting and planning . . . definitely supports the efficiency of market research. . . .

I would recommend that you help counter the type of criticism quoted [in the editorial] by publishing the record of CHEMICAL WEEK and

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: H. C. E. Johnson, Chemical Week, 330 West 42nd St., New York 36, N.Y.

other market researchers' forecasts made in the 1954-57 period. This should support the feeling of many of us that market researchers generally are accurate forecasters and more cautious than are sales managers, particularly those of the "old school" type. The latter are probably more responsible for overcapacity than any other single group in the industry. . . .

NAME WITHHELD

### Ozark-Mahoning Fluoride

TO THE EDITOR: . . . Interesting article titled "Fluorides: Favored by Fiat" (Sept. 2, p. 45). . . . Ozark-Mahoning Co. is one of the stannous fluoride producers.

WAYNE E. WHITE

Research Dept.

Chemical Division

Ozark-Mahoning Co.

Tulsa, Okla.

### Retain Water in Soil

TO THE EDITOR: Your report on water resources (Oct. 7, p. 49) is very enlightening and thought-provoking. The seriousness of the shortage of water brings to mind some things in the federal soil conservation program that are not sufficiently emphasized.

Looking at the picture from a broad point of view, we are running short of water because too much of our rainfall runs off the land and finds its way to the ocean to build up a brine from which the government is now trying to extract fresh water at great expense.

The soil conservation program is trying to prevent erosion of farm land with a feeble attempt at holding some water in farm ponds. This is in the right direction; but at the same time it is advocating tile drainage, which not only is helping to carry water to the rivers but also is doing a wonderful job of carrying our plant food to the ocean. . . .

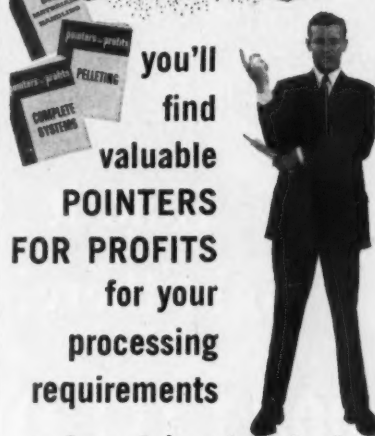
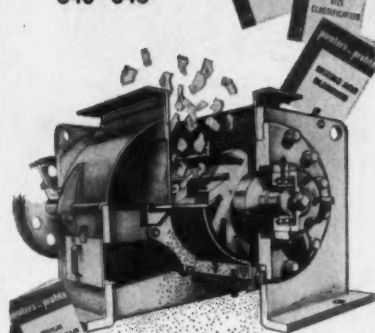
For many years I have been advocating a program of subsoiling and liming the soil with the idea that rain water should be absorbed by the soil to gradually increase or maintain our water table so that our wells do not run dry and that our crops have ample stored water to draw on when needed. This is, in turn, a means to cut down on surface runoff and would greatly

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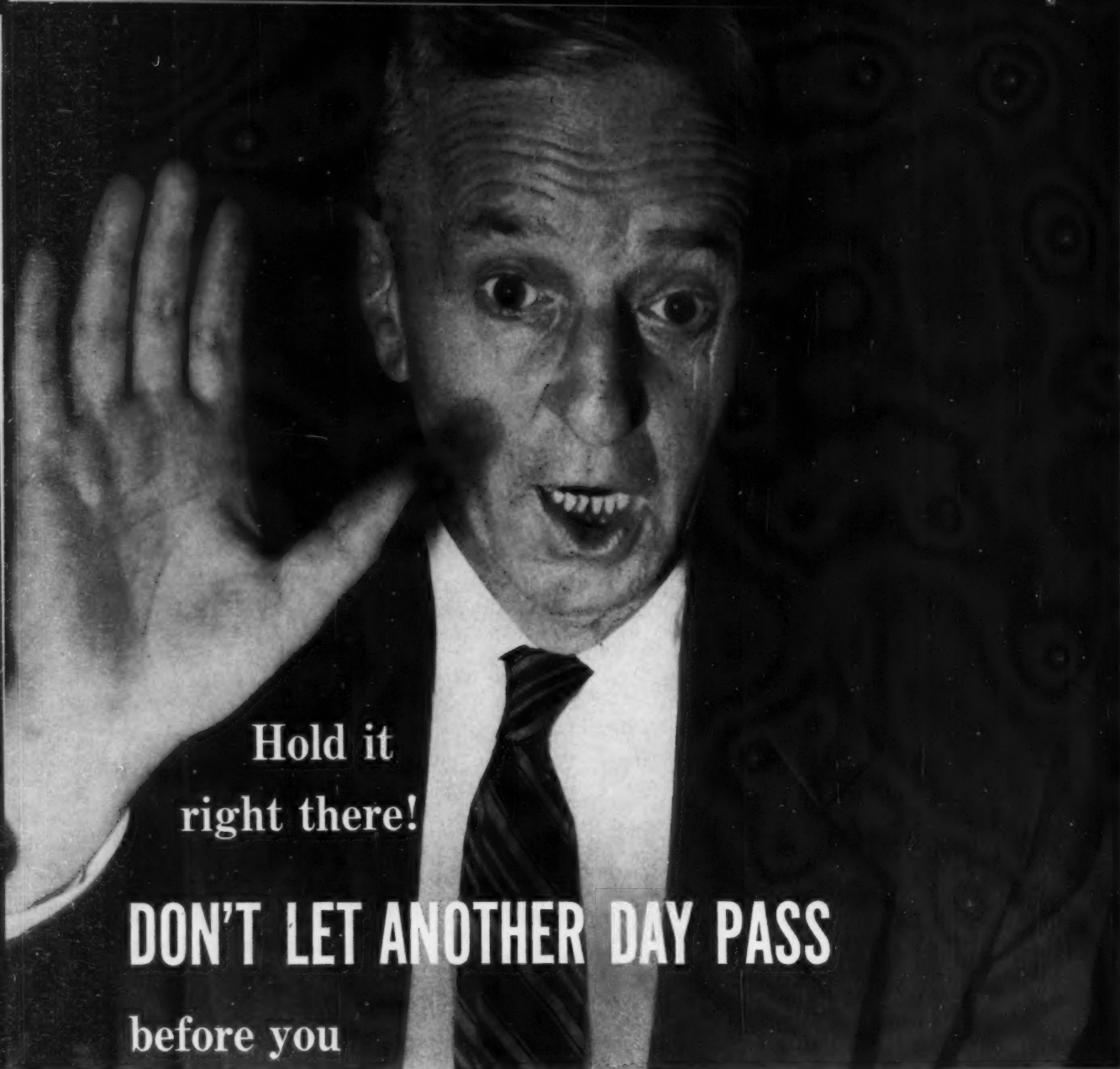
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**1962 BUYERS' GUIDE ISSUE** of Chemical Week



## LETTERS

alleviate the damage done by floods . . .

We want our rainfall stored in our lakes, but we don't want so much of it that our rivers have to carry it all to the oceans, making it necessary to recover it at great expense. We need flood control, but it should be tied in with water-retaining practices on farms. . . .

V. A. TIEDJENS  
Director of Research  
Growers Chemical Corp.  
Milan, O.

## Smog Red Tape

TO THE EDITOR: [Re] the information on Oxy-Catalyst, Inc., as stated in "On Mufflers by '64" (Nov. 4, p. 44) . . .

Oxy-Catalyst has not withdrawn its application. We informed the California Motor Vehicle Pollution Control Board Sept. 15 that our catalytic smog device could meet the new requirements that were established that date.

Since the requirements of the board now call for test data on several cars, the first test results have been furnished and other reports will follow promptly. Oxy-Catalyst's amended application under the new requirements is being prepared.

GORDON P. LARSON  
Executive Vice-President  
Oxy-Catalyst, Inc.  
Berwyn, Pa.

## Fertilizer Mix-up

TO THE EDITOR: . . . A few facts are incorrectly stated in an article concerning our company (CW, Oct. 14).

A plant photograph (p. 29), which you indicate is the new nitrate of potash plant being built by Southwest Potash Corp. in Vicksburg, Miss., is a photograph of Spencer Chemical Co.'s nitrogen plant, which is also located in Vicksburg on a site adjacent to the Southwest Potash construction site.

The article also states that plant construction will cost \$30 million. Our construction costs will be \$7 million.

And we contemplate startup in Jan. '62, not "early next spring." . . .

ROBERT H. BRIGHAM, Jr.  
American Metal Climax, Inc.  
New York

## Supplier, Not Backer

TO THE EDITOR: In your article "New Faces in U.S. Aerosols" (Nov. 11, p. 91) there is an ambiguous statement to the effect that "Union Carbide is reported to have a financial stake in the new venture," meaning Rochester Aerosol.

Rochester Aerosol is a customer of ours, and we are very happy about that. Beyond this we do not have a financial stake in the new venture.

T. M. HARTLEY  
Sales Manager  
Ucon Propellants  
Union Carbide Chemicals Co.  
New York

## MEETINGS

**American Society of Mechanical Engineers**, ASME winter annual meeting, Statler Hilton Hotel, New York City, Nov. 26-Dec. 1.

**American Management Assn.**, special materials conference, Savoy-Hilton, New York City, Nov. 27-29.

**28th Exposition of Chemical Industries (Chemshow)**, New York Coliseum, New York City, Nov. 27-Dec. 1.

**National Assn. of Corrosion Engineers**, Southeast regional conference and Florida general conference short course, Miami, Nov. 27-Dec. 1.

**Chemical Market Research Assn.**, national meeting, Mark Hopkins Hotel, San Francisco, Nov. 28-Dec. 1.

**Western Petroleum Refiners Assn.**, computer conference for refiners, Tulsa, Nov. 28-29.

**Building Research Institute**, '61 fall conferences, Mayflower Hotel, Washington, D.C., Nov. 28-30.

**American Institute of Chemical Engineers**, 54th annual meeting, Hotel Commodore, New York City, Dec. 2-6.

**Eastern Joint Computer Conference**, Sheraton-Park Hotel, Washington, D.C., Dec. 3-7.

**Chemical Specialties Manufacturers Assn.**, 48th annual meeting, Hotel Roosevelt, New York City, Dec. 4-6.

**Synthetic Organic Chemical Manufacturers Assn.**, annual meeting and dinner, Hotel Roosevelt, New York City, Dec. 7.

**Pharmaceutical Manufacturers Assn.**, Eastern regional meeting, Waldorf-Astoria Hotel, New York City, Dec. 11-13.

**American Assn. for the Advancement of Science**, Denver, Dec. 26-31.



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**Chemical Week**  
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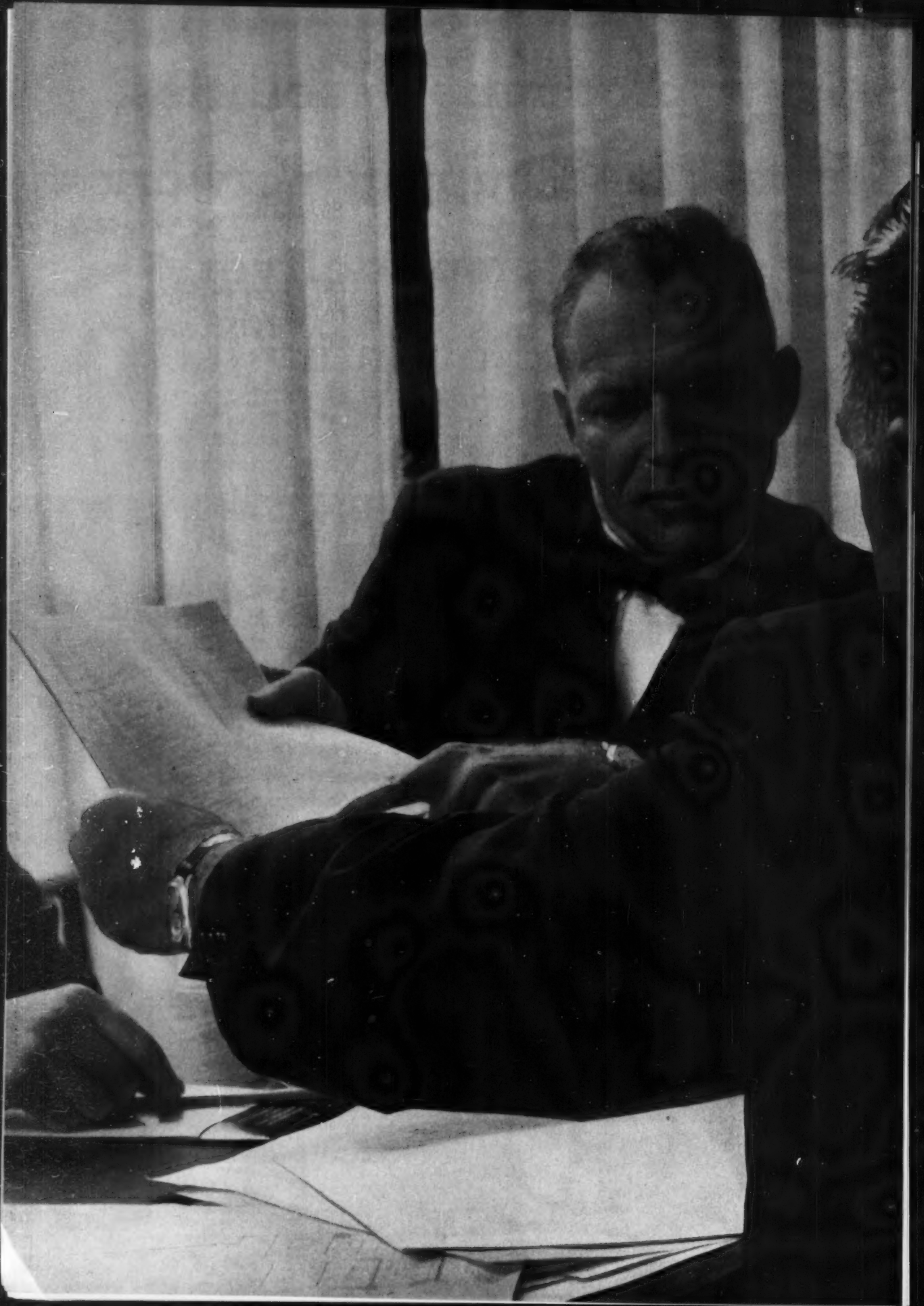
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# Business Newsletter

CHEMICAL WEEK

November 25, 1961

**Word of an Allied Chemical-Union Texas Natural Gas merger,** instead of the 50-50 joint venture revealed by the companies last week (*CW Business Newsletter*, Nov. 18), has stirred up industry speculation about the ultimate scope of Allied's petrochemicals plans.

Officers of both companies agreed early this week on Allied's purchasing of Union Texas shares (7,256,000 outstanding), on the basis of seven-eighths of a share of Allied for one of Union Texas. The deal is subject to approval by boards and stockholders of both firms, but insiders see little chance of a hitch.

**Initial—and official—disclosures concerned a joint project** involving a two-plant chemical complex costing \$40-60 million, which would be built on an optioned 2,000-acre site near Geismar, La. Major products mentioned: "high-purity olefins and aromatics." The companies weren't saying so, but the project supposedly, was to be much bigger than first reports indicated; talk centered on an eventual cost of close to \$150 million.

This could mean an internal ethylene source for Allied's plants at Orange, Tex. (ethylene oxide-glycol, ethanolamines, and a new, 75-80-million-lbs./year polyethylene plant); and perhaps a pipeline linking Orange with the proposed complex. Other possibilities: a polypropylene project near its General Chemical and Solvay Process plants at Baton Rouge; entry into styrene monomer and polymer production.

Allied will also likely merchant the noncaptive portion of the contemplated production, add to the keen competition for customers along the industrial Gulf Coast. First units earlier were slated for completion by mid-'63.

**Two helium recovery plants will be built in Texas** by Phillips Petroleum (Bartlesville, Okla.). Approval of the \$13.7-million/year contract wraps up the Dept. of Interior's Congressionally earmarked \$47.5-million/year contracting authority that is slated to save more than 3 billion cu.ft./year of helium.

The Phillips contract, under which 15.7 billion cu.ft. of helium will be recovered over a 22-year period, is the fourth awarded by Interior since Aug. '61. The first, okayed Aug. 15, was with Helex Co., which will build a plant at Bushton, Kan. Helium from here will be sold to the government for \$11.24/1,000 cu.ft.; total purchase is not to exceed \$9.5 million/year.

The second agreement (Aug. 22) was for a Cities Service Helex Co. plant at Ulysses, Kan., with the material to sell at \$11.78/1,000



## **Business Newsletter**

(Continued)

cu.ft., and an annual purchase ceiling of \$9.1 million. A National Helium Corp. contract (Oct. 13) calls for a plant at Liberal, Kan., to sell helium to the U.S. for \$11.78/1,000 cu.ft., up to \$15.2 million/year.

Helium produced by all four companies is to be transported in a government-built pipeline to the cliffside gasfield near Amarillo, Tex., where the helium will be stored until needed for vital defense and industrial programs.

•  
**Wyandotte Chemicals' propylene oxide plant will be built** by Fluor-Singmaster & Breyer, New York subsidiary of Fluor Corp., Ltd. The unit, for which Wyandotte's directors earlier okayed a \$3.5-million expenditure (*CW Business Newsletter*, June 10), will go up on the company's recently acquired 23 acres of waterfront property near Wyandotte, Mich. Construction will start soon, and completion is scheduled for July '62.

•  
**A \$3.5-million expansion is in the works** for Freeport Sulphur's unique offshore sulfur mining operations at Grand Isle, seven miles off the Louisiana coast. Bids for construction of the 1,500-ft. extension (that will include five platform bridges and a 224-ft. production platform) will be let in late December. Completion is scheduled for '63.

The new platform will follow original development plans, enable Freeport to drill 108 additional wells from the 4,076-ft. steel island.

•  
**Rohm & Haas' new adipic acid plant will cost about \$5 million.** The unit will be built at Louisville, Ky. (*CW Business Newsletter*, July 1), site of the former government-surplus butadiene installation the company bought last year.

The new expenditure will be in addition to the approximately \$12 million Rohm & Haas is spending to convert and expand the Louisville unit to production of methyl methacrylate monomer, acrylic molding powder, and ammonium sulfate.

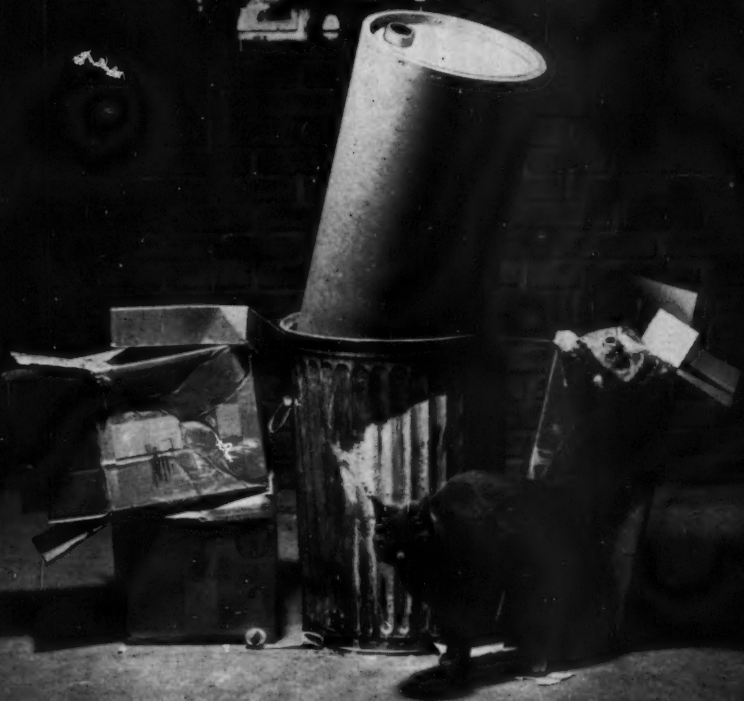
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**Conditions abroad will get tougher for U.S. polyethylene sellers.** The German chemical industry is petitioning the government to block "dumping" of U.S. chemicals, especially polyethylene. Under new tariff laws the Germans can impose higher import duties on products being sold there at cut-rate prices.

This move against U.S. products comes hard on the heels of similar action by the French (*CW Business Newsletter*, Nov. 4) and British polyethylene makers (*CW Business Newsletter*, Nov. 18).

Big fear among exporters is that such hostile action might spread, cover all chemicals, plastics and synthetic fibers sold abroad.



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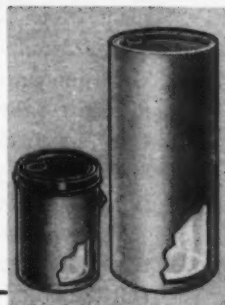


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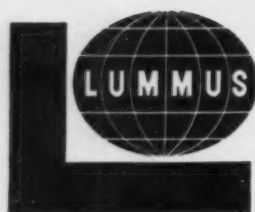
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ENGINEERS AND CONSTRUCTORS FOR INDUSTRY

# Saline Water Conversion Moves a Major Step Closer to Large-Scale Operation

## Department of The Interior Selects Lummus to Evaluate Freezing Processes and Design Demonstration Plant

The Lummus Company has been selected as the architect-engineer for the East Coast saline water conversion plant which is to be erected at Wrightsville Beach, North Carolina, Secretary of the Interior Stewart L. Udall announced recently. The Wrightsville plant is the fifth in a series of five plants authorized in 1958 by Congress to demonstrate the engineering, reliability, and economic potentials of the most promising conversion processes in existence today.

The contract awarded to Lummus calls for an evaluation of the freezing processes of saline water conversion. (Of the other plants in the series, three will use various distillation processes and one an electrodialysis process.)

The initial activity of Lummus' contract will require preliminary engineering service to prepare estimated plant costs, layouts, and reports. A second phase will include the design of the plant to permit issuance of specifications for the construction of the demonstration

plant as well as consultation with the Office of Saline Water on matters relative to awarding a construction contract for the plant.

Lummus was chosen from a group of 35 engineering firms considered for the assignment on the basis of its experience in such parallel fields of technology as refrigeration, heat transfer and crystallization. "Product" from the plant will be water of a quality suitable for municipal, industrial or other beneficial consumption. Production rate will be 250,000 gallons per day.

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CW PHOTO

Chemical industry spokesman Black: For synthetic organic producers, across-the-board tariff cutting could be fatal.



WIDE WORLD

White House spokesman Heller: Radically different economic situation requires radically different trade policy.

## Battle Brewing Over 'Master Plan'

President Kennedy, it became clear this week, is moving cautiously to launch a mammoth new program for coordinated economic development of the U.S. and its allies and trading partners. And it's becoming equally clear that major aspects of that long-range plan—involving new proposals on trade, tariffs, taxation and economic planning—are arousing strong emotions within the chemical process industries.

In Washington, Kennedy lieutenants—such as Walter W. Heller, chairman of the President's Council of Economic Advisers—are urging bold new economic measures. Included: partnership with the European Common Market, a much "freer-trade" version of the reciprocal tariffs act, tax law changes to boost industrial growth rates, and a more active role for government in shaping the economy.

These are the very things that are kindling wrath on the part of management—at least within some important segments of the CPI. Just last week in New York, for example, Du Pont's Crayton K. Black—speaking to members of Synthetic Organic Chemical Manufacturers Assn. (SOCMA)—specifically condemned some of the trade and tariff measures that Kennedy's advisers are advocating. Black is manager of trade relations for the Dyes and Chemicals Division of Du Pont's Organic Chemicals Dept., and chairman of SOCMA's International Commercial Relations Committee.

"It is now quite clear," Black declared, "that the Administration will press for a law in 1962 that will—

"(1) Authorize the President to reduce tariffs on an across-the-board basis.

"(2) Assist industries or geographic

areas that have been harmed by imports, by means of job retraining, loans, and other subsidies."

Black said the organic chemical industry's products are so interrelated that an across-the-board tariff cut might wreck large portions of the industry. The second provision, he went on, would permit the government to decide which industries are expendable. "Frankly," he said "we believe they are incapable of making such decisions."

Black agrees with President Kennedy that vigorous growth of domestic industry "is essential not only to our economy but to our security." But he denies that domestic industry growth would be stimulated by more of a free-trade program.

While other parts of the Kennedy blueprint—such as centralized economic planning, faster depreciation



write-offs to boost industrial expansion, and steps to stimulate industrial research—could conceivably have as much or even more impact, those relating to trade and tariffs are getting most attention now because they'll be coming into the political arena first. Rep. Hale Boggs (D., La.)—chairman of the powerful House Ways and Means Committee—will hold panel discussions on these matters next month, and will be ready to start hearings on a new trade bill early in the 1962 session of Congress.

Those hearings seem certain to include animated testimony from SOMA and other industry organizations, because Kennedy and his aides have indicated that they'll be asking for sweeping revisions in tariff laws such as the Reciprocal Trade Agreements Act, now due to expire next summer.

Actually, the Administration is trying to devise a trade policy adequate to deal with the new situation created by emergence of a united European economy. As Kennedy and his aides see it, this new situation is radically different from anything that has confronted the U.S. before, and calls for radical new policy approaches.

What is happening, they believe, is that two "super" economies—those of the European Common Market and of the U.S.—will soon dominate the non-Communist world. Together, these two economic entities, with nearly 500 million population, will control 90% of that world's industrial trade.

Outside of those two big market areas, however, there are numerous

other countries of varying degrees of wealth and industrialization. They range from Japan at one end of the spectrum to the truly underdeveloped countries at the other end.

What the U.S. needs to cope with this situation, according to Administration spokesmen like George W. Ball, Under Secretary of State for Economic Affairs, is a policy for effective economic partnership of the two big market areas in their relations with each other and with the rest of the Western world.

Details of this policy still have not been filled in. But it is now almost certain that it will represent a sharp change from the old reciprocal trade policy—and that the President will decide to force the issue in '62.

As things look now, Kennedy will ask for broad authority to offer reciprocal trade reductions on broad categories of industrial goods instead of on an item-by-item basis. Whether he will ask for authority to cut tariffs down to zero or by some lesser amount has not been settled. Neither has the time period over which the reductions would take place been decided, although five to seven years is the best bet. The categories of goods for which such authority would be requested have not been set either—although textiles already is being handled separately and presumably would not be included. In addition, the President will ask for authority to bargain directly with nations outside of Euromart on a range of trade goods of special interest to them.

While the new trade policy was being mapped out in Washington last week, Ball went to Paris and got representatives of the 19 other members of Organization for Economic Cooperation and Development (OECD) to accept a plan for a 50% increase in the Atlantic community's over-all output of goods and services during the 1960-70 decade.

This is viewed in Washington as another piece in a grand design being evolved by the Kennedy Administration for a sweeping reorganization of the non-Communist world in general and of OECD nations in particular.

One implication in the grand design—although U.S. officials are playing it down—is that the kind of economy toward which the Administration is groping will be one in which governments will assume an increasing regulatory role. They may not go in for elaborate economic planning on the French model; but governments may step up use of both spurs and brakes to get growth at home and to manage trade and aid abroad.

For the 20-nation OECD, Ball's growth plan would require an average annual over-all growth rate of 4.2%. Most chemical companies have been growing faster than that, particularly in the Euromart nations. But if the U.S. chemical industry has been growing at 7%/year while gross national product (GNP) has been rising only about 2.3%/year, then chemical growth might speed up considerably—providing that Kennedy can accelerate GNP growth to 4.2%/year.



State Dept.'s Ball: Wins pledge for 50% rise in 20-nation output by 1970.



Ways and Means Chief Boggs: Ready for spirited hearings on tariff bills.



President Kennedy: Determined to force the 'freer-trade' issue next year.





Consultant Aries: Preparing defense against three new suits in Europe.

## Lawsuits Unlimited

Robert S. Aries, industrial consultant formerly based in Stamford, Conn., this week prepared to meet a new round of lawsuits—this time in Geneva, Switzerland, where he has been staying the past few years.

Aries has been named as a defendant in eight civil and criminal suits now pending in U.S. courts, all stemming from alleged unlawful acquisition of trade secrets (*CW*, Jan. 7, p. 22). He is appearing before an investigating magistrate in Geneva, who is studying complaints filed by Hoffmann-La Roche and Merck & Co. to determine if Aries must stand trial.

Aries is charged with selling to Hoffmann-La Roche an option on a poultry-disease drug allegedly pirated from Merck. Hoffmann-La Roche is understood to be asking for the 200,000 francs (\$46,500) it says it paid for the option plus damages; Merck is asking 1 million francs damages. There has been an attachment against Aries to assure recovery.

Aries, who is understood to have pleaded innocent, has been cited in similar actions by Merck in this country. Merck says he induced one of its employees to copy and deliver to him secret information about Amprol, a drug (amprolium) developed to combat coccidiosis—a poultry disease. The company says it has testimony from an employee confessing his part in the alleged conspiracy.

**Others, Too:** Merck has filed civil suits in federal courts in Connecticut and New York against various companies affiliated with Aries. Merck is

asking damages, return of all stolen papers, and injunctions against further disclosures of the secret data.

In addition, Aries was indicted in Essex County (N.J.) Court last March on a charge of receiving stolen goods—Merck charges he got samples of amprolium from his contact in the company. Similar charges form the basis of another criminal indictment returned against him last December in the Federal District Court in New Haven, Conn.

The criminal actions are grounds for extradition of Aries to this country, but such action is known to be difficult in Switzerland.

Similar conspiracy charges have been leveled at Aries by Rohm & Haas, which claims he illegally received detailed secret information about a polymeric oil additive. Rohm & Haas says it too has tracked down the employee who supplied copies of the information, and has a confession.

Rohm & Haas brought civil suit in New York against Albert P. Sachs—an associate of Aries—in August. Sachs received a Canadian patent in '58 covering an oil additive that Rohm & Haas says was stolen from its lab. Similar charges are on file in Connecticut. The company is now preparing its case, but doesn't think there will be any trial before next fall—mainly because Aries is not in the country to be served. Rohm & Haas says it is anxious to get at least some judgment against Aries or any of his affiliated companies to help in legal battles that loom in foreign countries, where R&H executives fear Aries might sell the information.

**Lawyer Wants Out:** Meanwhile in Connecticut the lawyer representing five of Aries' companies—but no individuals—has asked to be allowed to withdraw from the case. James O'Connor Shea says that Emile Aries—brother of Robert, and with whom the lawyer has been dealing—has failed to provide information and documents necessary to conduct his defense of the four suits pending there. In addition to the Merck and Rohm & Haas suits, Sprague Electric Co. charges Aries stole information on a tantalum capacitor and sold it in several European countries. And Celanese Corp.—charging he failed to deliver data on an acetate gasoline additive for which it paid him \$6,000—is asking \$206,000 damages.



Amerace's Norton: Aiming to boost sales via further chemical expansions.

## Building on Silicates

Amerace Corp. (New York), continuing to expand in chemicals, has brought onstream a sodium silicate plant to be operated by its Butler, N.J., division, Allegheny Industrial Chemical Co., and is in the market for chemical acquisitions.

The \$250,000 "fully automated" unit is the third plant constructed in a chemical expansion program that Amerace started in Butler four years ago. A silica gel plant started up in '57; a magnesium silicate unit in '59.

Capacity of the new unit is about 10,000 tons/year. Most of the output will be used captively; the remainder will be sold for use in manufacture of detergents and adhesives.

According to Amerace President Victor T. Norton, the company's capital investment in chemicals has tripled since '57. By the end of the year, he estimates, sales of Allegheny Industrial will be three times the '58 level.

Reasons cited for the move into sodium silicate production: excellent market potential in the Northeast, and the company's growing captive use of the product. Since '58, Allegheny Industrial's use of sodium silicate—the most expensive raw material in the production of its magnesium silicate, other nonsoluble silicates and silica gels—has tripled.

Amerace says it's interested in further diversification into the chemical field, either by cash purchase or exchange of stock. Before the expansion program is complete, officials say, the majority of the company's income may well come from chemicals.





Defense witness Logan: He insists that Penn-Olin increased competition.

## Antitrusters Astir

Antitrust trials involving six chemical process companies occupied two federal courtrooms this week, with the Justice Dept. pressing its enforcement program against alleged monopoly and price fixing.

(1) In Wilmington, Del., witnesses for Penn-Olin took the stand to provide evidence that this joint venture does not violate the Sherman or Clayton acts (*CW*, Nov. 18, p. 13).

(2) In New York, Olin Mathieson and Chemetron pleaded innocent to a contempt-of-court charge of price fixing in carbon dioxide; General Dynamics and Air Reduction, however, pleaded guilty to the same charge (*CW*, Jan. 7, p. 22).

**Executives on the Stand:** Stanley de J. Osborne, Olin president and defense witness, testified that Olin has no fixed policy on joint ventures, but judges each individually. At first the Penn-Olin venture was not considered profitable, but the final examination of estimates indicated that Olin could probably earn the 10% that it deems adequate for capital investments.

In answer to the complaint that Penn-Olin restrained trade in sodium chlorate, John O. Logan, Olin vice-president and chemicals division manager, said that Olin had actually increased competition. He was backed up on this by Chris F. Bingham, vice-president (chemical sales) of Pittsburgh Plate Glass.

Logan also stated that there was not, nor had there been, any possibility of Penn-Olin's entering production of potassium chlorate or perchlorates.

This, he noted, would have necessitated an unwanted exchange of confidences between the parents.

Cross-examination revealed that although the Penn-Olin sales arrangement allowed Olin to sell anywhere in the U.S., Olin did not necessarily take advantage of this. For example, Pennsalt had a contract with another distributor for sale of sodium chlorate as an herbicide.

Pennsalt President William Drake and Vice-President Hugh Land were also scheduled to testify.

**New Hearing on Old Suit:** The carbon dioxide trouble dates back to a '52 consent decree against price fixing, among other things, to which Liquid Carbonic, now a division of General Dynamics, and Air Reduction were parties. The Justice Dept. now accuses these companies, four of their executives, and Olin and Chemetron of criminal contempt of court for allegedly participating in a price-fixing conspiracy extending back to '53.

General Dynamics and Air Reduction have pleaded guilty. They say that since carbon dioxide is only a very small percentage of their business, they wish to avoid a trial and its pursuant complications.

The four executives accused—they have pleaded no contest—are George C. Cusack, president of Air Reduction's Pure Carbonic Division; Air Reduction Vice-President John J. Lincoln; and Liquid Carbonic's Vice-President Henri C. Mathey and former President Rex L. Nicholson. (The plea of no contest puts the defendant at the mercy of the court but is not an admission of wrongdoing.)

Olin and Chemetron went to trial this week after pleading innocent to the charges. The plea of innocent stems from their contention that they have not been involved in price fixing, were not parties to the original judgment and received no notice of the decree. The government must prove that Olin and Chemetron were conspirators and that they can be included in the charge.

"Chemetron cannot understand why it is subject to contempt proceedings, since it was not a party to the original complaint and consent decree," says President James Dunham.

Thus the big question is raised: Can Olin and Chemetron be bound to a consent decree to which they were not asked to consent?



Houston Chemical's Sargent: Squaring off against biggest competitors.

## New Head at Houston

Houston Chemical Corp. (New York) — two-year-old upstart competing against some rugged old-timers — last week got a new president. He is Daniel I. Sargent, for the past six years an officer of Manufacturers Hanover Trust Co. (New York) and previously on the financial staffs of W. R. Grace & Co. and Celanese Corp.

Sargent went to Houston Chemical via Philadelphia and Reading Corp., which has an 80% interest in Chatham-Reading Chemical Corp., parent company of Houston Chemical. He had been elected to the P&R board of directors last May.

Otherwise Houston Chemical's roster remains the same, except that Harold D. McGowan moves up from president to chairman of the board. He continues to rank as chief executive officer. Vincent H. Shea — who founded both Chatham Chemical and Houston Chemical in '59 after selling phosphate producer Shea Chemical to Hooker Chemical in '58 — continues as chairman of the executive committee. And Howard A. Newman, youthful president of P&R, continues as chairman of Chatham-Reading.

Several months ago, Houston Chemical started up its first production units. Startup of its tetraethyl lead and tetramethyl lead plant at Beaumont, Tex., was considered to be a factor in recent price cuts on those products by Ethyl Corp. and Du Pont (*CW Market Newsletter*, July 8). Houston's ethylene oxide and glycol units are due in next month.



## Long-Haul Cryogenics

Britain's decision last week to import liquefied methane—with two specially designed tankers slated to be running between Algeria and Essex by '64 (CW Technology Newsletter, Nov. 18)—sets a precedent that may soon alter the course of industrial development in areas that have been handicapped by lack of natural gas. In addition, the plan raises British hopes for substantial long-range shipment of liquefied petroleum gas (LPG) and natural gas liquids.

Although some companies have felt all along that the technology involved was not difficult to surmount, the experimental voyages of the *Methane Pioneer* have convinced British officials of the practicality of the plan—at least in the Africa-to-U.K. case.

The imported gas—under the jurisdiction of the U.K. Gas Council—is largely destined for household heating. However, if the gas proves more economical than domestically produced gas, as expected, it's possible that transported quantities will be increased to allow for some industrial usage. The liquefied methane's refrigerating qualities, however, will probably not be put to use in oxygen and nitrogen production.

France has been investigating the possibilities of a trans-Mediterranean pipeline for many years. The technical problems there appear very difficult, so it's possible that France and the rest of northern Europe may resort to shipping as an interim procedure and to build demand. However, it appears likely, says Vice-President Gordon Kiddoo of Air Products and Chemicals (Allentown, Pa.), that when the technique is developed and the volume is large enough, there will be such a pipeline.

The 18-in. English pipeline running from the terminal facilities at Canvey Island, Essex, will be able to handle LPG as well as methane. Shipping of LPG has been worked out—the Stanvac tanker *Gtshumar* has just started carrying refrigerated propane and butane from Arabia to Japan. The British oil industry is therefore hoping to sell substantial quantities of imported LPG to the gas industry. At this time, offers of LPG are said to involve Caribbean sources.

Both Air Products and Hydrocarbon Research (New York) foresee use

of liquid methane to serve large U.S. cities during peak demands. Gas could be pumped in, liquefied and stored during the summer slack seasons, then regasified as needed.

According to Gas Council Chairman Sir Henry Jones, import of the liquid methane will mean British consumption of coal and petroleum products will be reduced by 800,000 tons/year and more than 400,000 tons/year, respectively.

## Reversal on Buying

The Agency for International Development has reversed its purchasing policy on fertilizers for a U.S. aid-to-Korea program, and will buy all of the fertilizer from U.S. producers (CW, Nov. 18, p. 37).

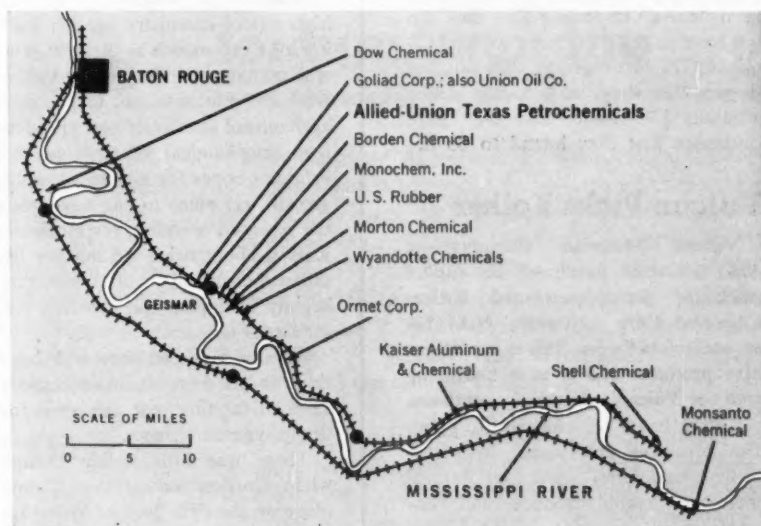
Because of a cut-off price of \$2.69/fertilizer unit on an estimated \$17.6 million worth of fertilizer, U.S. suppliers were able to get only \$11.6

million in contracts during the first round of bidding.

The chemical industry's complaints were instrumental in reversing the policy. Fowler Hamilton, head of AID, decided that the complaints showed merit and that the remaining \$6 million in contracts would go to U.S. companies.

Hamilton said AID will investigate the fertilizer purchasing program for foreign aid to improve procedures, standardize terms, centralize authority, and use funds most economically. During the year ended last June 30, \$49.1 million worth of fertilizer was purchased for aid abroad. This figure is expected to rise this year.

Hamilton set future policy this way: "When . . . national interest appears to require purchases of fertilizers outside the U.S., all interested parties will have an opportunity to present their views to the agency before any such purchase."



## Building Big by Louisiana's Levees

Last week's pact for a \$40-60-million joint venture by Allied Chemical and Union Texas Natural Gas Corp. (CW Business Newsletter, Nov. 18) adds extra emphasis to the conclusion that for a community that five years ago had no chemical process industries at all, Geismar, La., has come a long, long way. Petrochemical units to be built by Allied and Union Texas

north of the little town (60 population: 100) during the next 19 months will be on a 2,000-acre tract next to the 488-acre site acquired several weeks ago by Union Oil of Calif. (CW, Nov. 4, p. 44). Even if Union Oil doesn't decide soon on a plant for its new site, there will still be at least six major CPI facilities within four miles of Geismar (map, above.)



## Mounting a Defense

Senator Roman L. Hruska (R., Neb.) fired the main salvo last week as the pharmaceutical industry prepared for another battle with Senator Estes Kefauver's Subcommittee on Antitrust and Monopoly. Representatives of the industry will present their case before the subcommittee Dec. 6-8, in Washington.

Speaking at a press conference called by the companies in New Jersey's pharmaceutical industry, Hruska—a minority member of the subcommittee—called for a reexamination of the current drug industry investigation to see if it isn't "shrewdly rigged to discredit an industry before the bar of public opinion."

The senator charged that drug manufacturers are the "whipping boys" of the moment. He viewed what he called their harassment as part of a trend to "undercut and undermine the entire economic system which has built this nation and made it great."

Executives of the pharmaceutical companies admitted that they had been "naive" in feeling that they did not have to tell their story to the U.S. public. The investigation, they say, has shown that they have a big public relations job ahead; and they gave assurance that they intend to do it.

## Vulcan Picks Kolker

Vulcan Materials (Birmingham, Ala.) last week purchased the capital stock of privately owned Kolker Chemical Corp. (Newark, N.J.) for an undisclosed sum. This move means new products and a new marketing area for Vulcan's chemical operations.

Kolker has a chlorine-caustic plant, also produces chlorinated hydrocarbons, plasticizers, some agricultural chemicals, methyl bromide, and benzoic acid.

Kolker will be operated as a wholly owned subsidiary, with Wesley A. Sowers—also president of Vulcan's Frontier Chemicals (Wichita, Kan.)—as its head. Product lines of Kolker both augment and complement those of Frontier, with which it will be closely associated.

Plans call for expansion of physical facilities and marketing activities at Kolker, and the broadening of Vulcan's position in the Eastern chemical market.

Du Pont's Wallace E. Gordon



DRAWING BY RICHARD P. KLUKA

## 'Customers' Man' Moves Up

Wallace E. Gordon, a former high school chemistry teacher taking over this month as the new general manager of Du Pont's Industrial and Biochemicals Dept., sees agricultural chemicals and products from biochemical research as the brightest hopes for his department's growth. He plans to peg new-product research spending for biochemicals at about twice the rate for industrial chemicals; but is investing heavily in application research for industrial chemicals as well.

Foreign markets, too, will continue to get more attention; export sales so far this year are up more than domestic volume.

There was little policy change when Gordon moved into a new office on the fifth floor of Wilmington's Du Pont Bldg. to succeed Clark W. Davis, who retired Nov. 1 after a 44-year career with Du Pont. The two had worked closely together since '57, when Gordon became assistant general manager under Davis in the former Grasselli Chemicals Dept. The two remained in the same positions when Grasselli absorbed various operations of the Polychemicals Dept. and became the Industrial and Biochemi-

cals Dept., one of the five largest of Du Pont's 12 operating departments in the U.S. (Divisional sales totals are confidential.)

Gordon—born in Detroit 54 years ago—earned a Ph.D. in chemistry at the University of Michigan in '33, started that same year with Du Pont as a research chemist. Later he transferred to sales, becoming sales manager for agricultural chemicals in '44 and assistant director of Grasselli sales in '48. He was head man for all Du Pont advertising for two years before returning to Grasselli as assistant general manager.

Since then he has played a key role in shaping the department's sales and research programs. To balance out his top-management team, Gordon has named Benjamin F. Schlimme—an engineering and production specialist—as assistant general manager.

As an organizer and administrator, Gordon has a favorite precept: Delegate—don't meddle. As a marketing executive, he tells his salesmen: "Make it a point to find out what our customers are dreaming about. What will their needs be a decade from now?"



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## **national roundup**

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### **Companies**

**Resisto Chemical Co.** (Wilmington, Del.) is purchasing the entire capital stock of R. E. Tongue Bros. Co. (Philadelphia) for an undisclosed sum (reportedly less than \$1 million). Resisto's product lines include plastic coatings for paper, cardboard and fiber containers; Tongue produces containers for foods, oils, detergents and corrosive products.

**Blane Corp.** (Canton, Mass.) has changed its name to Blane Chemical Corp. The company produces vinyl and polyethylene compounds and color concentrates.

**Chemway Corp.** (Wayne, N.J.) and Weco Products Co. (Chicago) are planning to merge, subject to approval of stockholders. Chemway—which would be the surviving company—would issue two shares of its stock for each share of Weco stock; except that Weco stock owned by the Woodside family and certain other large stockholders would be purchased by Chemway at \$18/share. Chemway produces ethical and proprietary drugs, cosmetics and toiletries; Weco makes Dr. West toothbrushes and other toilet products.

**Arizona Fertilizer and Chemical Co.** (Phoenix, Ariz.) and Southwest Agrochemical Corp. will merge to form Arizona Agrochemical Corp. (Chandler, Ariz.) if the move is ratified at a special stockholders' meeting late this week. Southwest's assets of \$4.5 million include a 50% stake in Southwest Nitro-Chemical (Chandler).

**New Companies:** Recently incorporated in Delaware: Maradel Products, \$2 million authorized capitalization, to deal in chemicals; Modern Solvents & Chemicals Corp., authorized capital stock 1,000 shares, no par value, to deal in petroleum products; Street Sulphur, authorized capitalization \$50,000, mineral interests in lands; and PBA Pharmaceuticals, authorized capitalization \$1 million.

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### **Expansion**

**Phosphates:** Duval Sulphur & Potash Co. (Houston, Tex.) and Kern County Land Co. (San Francisco) are carrying out a joint prospecting program and economic evaluation of phosphate reserves at Sublette Ridge, near Border, Wyo. The area had been prospected during World War II for its vanadium values, but they were not then economic.

**Plastics:** General Tire & Rubber Co. (Akron, O.) is exercising its option to buy an 80-acre tract in the

Columbus-Lowndes Industrial Park near Columbus, Miss. Company President M. G. O'Neil says the site is earmarked for "possible future expansion of our plastics operations."

**Naphthalene Products:** Standard Naphthalene Products Co. — subsidiary of Standard Chlorine Chemical Co. (South Kearny, N.J.) — has bought a 7.5-acre plot with a 20,000-sq.ft. building in Toledo, O., and plans to convert the property into a naphthalene processing plant by January.

**Sulfur:** Trans-Jeff Chemical Corp. (Houston, Tex.) — joint venture of Jefferson Lake Sulphur and Transcontinental Gas Pipe Line — has awarded an approximately \$350,000 contract to Fluor Corp. for expansion of its sulfur recovery plant near Tilden, Tex. This will bring capacity to more than 100 long tons/day by next June.

**Metasilicate:** National Silicates Limited (Toronto)—affiliate of Philadelphia Quartz Co.—is equipping its plant to start production of anhydrous sodium metasilicate. The company already turns out sodium metasilicate pentahydrate and sodium sesquisilicate.

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## **foreign roundup**

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**Petrochemicals/Argentina:** Fish International Corp. of Panama has been named to perform all engineering and construction of the \$70-million petrochemical complex to be built near San Lorenzo, Argentina (*CW*, Jan. 7, p. 23). Fish International is an affiliate of Fish Engineering Corp. (Houston, Tex.), one of the five U.S. companies that together own Petroquímica Argentina S.A. (PASA), the Argentine concern that will own and operate the facility.

**Fertilizer/Indonesia:** Djambi, on the island of Sumatra, has been selected by Indonesian government agencies as the site for a nitrogen fertilizer plant. Raw material will be either crude oil—initially 26,000 tons/year—or an equivalent amount of natural gas.

**Pharmaceuticals/Venezuela:** Merck & Co. (Rahway, N.J.) is opening a plant at Caracas, Venezuela, for production of steroids, vitamins, antibiotics and medical specialties.

**Pharmaceuticals/Pakistan:** Parke, Davis & Co. (Detroit) is building an \$850,000 plant and sales office in Karachi, Pakistan. The plant will produce an "essentially complete" line of P-D pharmaceutical products, including antibiotics, antihistamines and antimalarials.



## Security Analysts' Opinions on Chemical Stocks

“Stocks of inorganic chemical companies are favored. Short-term outlook (up to a year) is good.  
Stewart Hume; Spencer Trask & Co. Kevin Bradley; Dean Witter & Co.

“Larger chemical companies will follow the business cycle, probably do well the first part of '62. But the smaller companies should do even better and are favored. Ralph Geer; Laird & Co.

“Short range is selective, with Air Products and Pennsalt among the favored stocks.  
James Syrett; Kidder, Peabody & Co.

“An above average market for chemical stocks is shaping up in the fourth quarter.  
William La Tourette; Shearson, Hammill & Co.

“Chemical stocks will do better in '62. Du Pont, Allied Chemical (particularly over the longer term) and Commercial Solvents are favored. Robert Pearl; Grimm & Co.

“Du Pont should be prominent in a good fourthquarter. But the longer-range outlook for chemical stocks is becoming increasingly subject to the business cycle. No particular favorites—with the possible exception of Spencer—among the chemical stocks. Henry Le Vay; Fiduciary Trust Co. of New York

“Chemical stocks may rise 5% on the average next year. Scott Goddard; Abbott, Procter & Paine

“We are not recommending chemical stocks in general, although Rohm & Haas, Celanese and American Cyanamid appear to offer good value. Blev Dunklin; Clark, Dodge & Co., Inc.

“Chemical stock prices should follow the market in the next three months. Rohm & Haas and American Cyanamid are favored. Robert Newton; Clark, Dodge & Co., Inc.

“Chemical stock prices are expected to move up in next 12-18 months relative to general market. Stoddard Knowles; Hornblower & Weeks

## Wall Street's Verdict on Chemicals

Despite scattered bearish sentiment, most security analysts anticipate increases in chemical common stock prices in coming months (see typical comments, above).

Reasons for this optimism: some chemical stocks are still priced below their historic highs, but more important is the encouraging growth record of the chemical industry. Chemical sales, expected to near \$30 billion this year (*CW Special Report*, Nov. 4, p. 105), have grown at an average rate of 8%/year in the past decade,

nearly double the rate for all industry. Sales of \$55-60 billion in '70 are considered more than probable.

Furthermore, chemicals have generally outperformed other industries, steadily increasing relative profit margins (see chart, next page) over the years. In '53, for example, chemical profit margins were 6.1% vs. 4.1% for all other industries, a ratio (6.1/4.1) of 149%. By '60, the comparable figures were 7.5%, 4.1% and 183%.

Behind this achievement lies the industry's relatively low labor cost per

unit of output, its utilization of abundant low-cost raw materials, and a steady stream of new products resulting from the highest private research expenditure of any industry. Broad diversification in products and markets, and the firm position of chemicals in both civilian and military applications are additional arguments for long-term strength in chemical stock prices.

**Shock Resistant:** Even if there were a sharp reversal in the stock market in general, chemical stock prices



would hold up "relatively well," declares Francis S. Williams, president of Chemical Fund, Inc. (New York). He expects a good fourth quarter.

In the third quarter of this year the mutual fund bought stock in Air Reduction, Allied Chemical, Crown Zellerbach, Kimberly-Clark, Merck, Miles Laboratories, Nalco Chemical, G. D. Searle, Montecatini Mining & Chemical, Chemische Fabriek Van Der Grinten (photocopy materials and equipment) and drug and food producer Koninklijke Zwanenberg-Organon (the latter two are Netherlands companies). It sold American Agricultural Chemical, Corn Products, El Paso Natural Gas (second preferred), Monsanto Chemical, National Lead, Smith-Douglass, Spencer Chemical, and Parke, Davis in the same period.

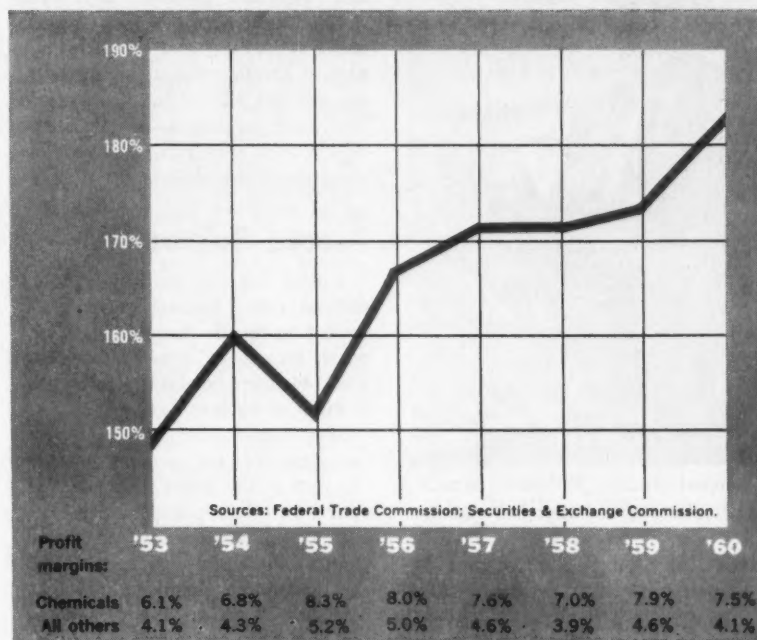
Chemical Fund is interested in companies that are not "commodity situations" (e.g., heavy in polyethylene production), wants to diversify its investments "over a wide range of companies in many industries that . . . will achieve above-average growth as a result of chemical research and development." This policy sometimes takes the fund afeld from strictly chemical stocks. For example, it has holdings of over \$10 million in Xerox Corp. (graphic arts).

**Research Hole Card:** Williams and others count heavily on research to keep the chemical business—and the market in its securities—healthy. Postulates Williams, "the number of compounds that can be made by chemical reactions is almost infinite. Thus the growth of the chemical industry has no practical limits."

At the dedication of Monsanto's new research center near St. Louis, recently, Board Chairman Charles Allen Thomas took issue with a magazine article titled "Chemicals: The Ball Is Over" (*Fortune*, Oct. '61, p. 125). Asked Thomas, "Is the party really over for science and technology? We don't think so." He observed that a "whopping percentage" of new patents are issuing in the field of chemistry. He justified Monsanto's investment in the new center on grounds that the company has "learned the value of research expenditures as they are reflected in the profit and loss statements every year."

In a talk before 400 New York

## Lower costs help chemicals thwart the profit-squeeze



security analysts, Du Pont President Crawford Greenewalt included research as part of the company's approach to solving the problems of excess capacity, intense competition and falling sales prices. (Other remedies: cost reduction and process improvement; increased emphasis on technical and market development work for Du Pont customers.)

Says Greenewalt, "If you are going to make hay out of your technology you've got to do it quickly." Cutting the lead time between test tube and marketplace is getting particular emphasis at Du Pont, he adds, because there is now much shorter time in which to cash in on a development before competition moves in. For example, Du Pont had a 15-year lead time with nylon. But its Delrin polyacetal plastic, launched in '60, is already meeting commercial competition (from Celanese's Celcon).

Du Pont employs 1,350 staffers, spends \$60 million/year on pioneer research. An additional 2,850 technical personnel and "vast sums" figure in "supporting research," which aims at the improvement and extension of established product lines.

But the profitability of research could be seriously affected by changes

in the patent system such as those now under consideration (e.g., Sen. Estes Kefauver's bill, S. 1552, aimed at drug patents, *CW Viewpoint*, Sept. '73, p. 5). Samuel Lenher, a vice-president, director and member of the executive committee of Du Pont, points out that his firm's "costly, speculative and time-consuming" ventures in exploratory chemistry are feasible "only when there is some assurance of a head start in the race." The American patent system has produced "one of history's most breathtaking bargains," he says, the cost to society is "nothing at all," and critics "distort its nature."

**Three Bears:** Pessimists about the future of chemical stocks are infrequent but fervent. Alan Greenspan of Townsend-Greenspan & Co. feels that while chemical stocks will follow the general stock market for the next two years, a "significant bear market will develop in perhaps a year and a half." When the slide comes, Greenspan predicts, chemical issues will ride it down as a group. Compared with the over-all decline in chemical stocks, differences between companies should not be significant, in his opinion.

Greenspan, as do many forecasters, bases his prediction of price-earnings





**Chemical Fund's Williams expects good sales and earnings this quarter.**

ratios over a long period of time on a monetary measure, the major component of which is an index of total bank debits divided by total bank loans. (Total bank debits equals total dollar value of all checks drawn by individuals and business firms. Total bank loans equals total dollar value of all outstanding loans of all U.S. commercial banks.)

Robert H. Stovall, partner and director of research for E. F. Hutton & Co., has not been recommending chemical stocks as a group for some time. He is disturbed by overcapacity and price cutting in the industry. But specific issues or so-called "special situations" get attention from time to time.

Walter K. Gutman of Stearns & Co., author of "The Gutman Letter," recently compared Du Pont, Corning Glass and G. D. Searle with International Business Machines, which he calls "The greatest short sale on the board." Gutman argues that some stocks are priced "in the realm of fantasy" because of unrealistic growth anticipated by investors.

**Small vs. Big:** Analysts have mixed feelings about whether the big companies or the small ones are the best investment. Some argue that only a big company weathers economic storms. Others say certain big chemical firms are "tired blue chips"; they're more enthusiastic about the smaller growth situations. "Progressive"

companies—e.g., Scott Paper, Minnesota Mining and Manufacturing, Air Products & Chemical, Pennsalt, Hercules Powder Co., Wyandotte, National Starch and Chemical and FMC Corp.—don't lack for support in the financial community. But the analysts will be the first to agree that their predictions—even as those of the least sophisticated investors—don't imply any guarantees.

## Record Salters

**United Salt Co. has formed a new division called Records Security Unlimited to handle the storage of corporate records at its mine at Hockley, Tex., 40 miles northwest of Houston, in event of nuclear war.**

Says Lorne Van Stone, executive vice-president and general manager, "In view of the growing threat of nuclear war, more businesses are seeking a means of protecting vital business records, and our unlimited mine storage area offers complete protection from the effects of atomic bombing" (see also *CW*, Oct. 14, p. 38).

Tunnels in the Hockley mine are 1,620 ft. underground with a 400-ft. cap-rock ceiling. Very low moisture content in the air inside the mine retards mould, rust and corrosion. Van Stone says the area is suitable for paper, film and magnetic tape. Dangers of fire, storm and explosion are also considerably reduced.

The firm will provide storage facilities ranging from less than 1 cu.ft. to 2,500 cu.ft. The vaults will be protected by steel doors and armed guards and will include a microfilm projector for private screening of records by depositors. One room, 30x60x300 ft. has been prepared for use.

United Salt's plans are in line with findings by the National Industrial Conference Board after a catastrophe preparation survey of 205 manufacturing firms. The most common action taken by those companies is the safeguarding of vital company records in the event of a disaster.

About 40% of the firms store vital records in locations away from headquarters in underground vaults or vaults of small-town banks. However, while most companies are providing for storage of vital records, the survey shows only 5% of the firms have built fallout shelters and less than 5% say they are considering such construction.

## LABOR

**Settlements:** The Pittsburgh Plate Glass Co. plant at New Martinsville, W. Va., and Local 45 of the International Chemical Workers Union have reached a tentative settlement, ending a 23-week strike. Terms were not disclosed.

- Standard Oil Co. (Ohio) sales division operating employees at Toledo, O., returned to work after a wage agreement was reached, ending a two-day strike. The settlement, affecting about 125 members of the Independent Oil Workers Organization, provides wage increases of 9¢/hour for truck drivers, mechanics and warehousemen. Wage increases of clerical workers will be geared to sales.

- Exolon Co. (Buffalo, N.Y.) and United Steel Workers Local 1411 have agreed on a new two-year contract providing an immediate 6¢/hour wage boost and another 6¢/hour increase Nov. 1, '62. The agreement, ending a five-day strike, covers about 100 production and maintenance employees and provides an additional 4½¢/hour for job classification adjustments.

- Employees at Niagara Falls Smelting & Refining Division (Buffalo, N.Y.) have accepted a new, one-year contract providing a 5¢/hour general wage increase. The workers, members of Mine, Mill & Smelter Workers Local 813, also receive the Friday after Thanksgiving as a paid holiday and improved hospital, surgical and life insurance benefits.

- About 1,600 members of Local 285, United Rubber Workers, have voted to end a strike at Armstrong Cork Co. (Lancaster, Pa.) and have resumed work after a 12-day strike. The union has sought a closed shop, supplemental unemployment benefits and new seniority rules. Wages were not an issue in the strike. Negotiations toward a new contract are pending.

**Staff Cutback:** Spencer Kellogg Division of Textron, Inc. has reduced the staff in its Buffalo, N.Y. headquarters by about one-third, as the result of the sale of three of its soybean processing plants. Official figures of the employment cutback have not been disclosed, but more than 50 employees have been or will soon be idled. The company says "liberal" termination allowances have been granted.



**Employer Verdict:** The Fibreboard Paper Products Corp. (Emeryville, Calif.) has won a verdict for \$309,000 in damages against the United Steelworkers of America and the union's Local 1304. The firm charged that a strike by maintenance men in '59 cost it \$554,000 because production workers refused to cross the picket line. The international union and the local were ordered by a jury in Alameda County Superior Court to pay \$285,000 for the loss of business and \$24,000 for picket line violence. Jay Darwin, attorney for the unions says he will appeal to the U.S. Supreme Court if necessary.

## LEGAL

**Competition Suit:** Photostat Corp. (Rochester, N.Y.), subsidiary of Itek Corp. (Waltham, Mass.), has been granted a temporary injunction by New York Supreme Court Justice Clarence Brisco in its \$3-million suit against Klondex, Inc., alleging unfair competitive practices.

The temporary injunction, pending trial of the suit for a permanent injunction and damages, prohibits Klondex from: inducing Photostat employees to leave jobs to join Klondex, soliciting unadvertised customers of Photostat who became known to Klondex through information obtained from former employees of Photostat, and disparaging Photostat's products, policies and operations. Seven officers, directors and major stockholders of Klondex are named as codefendants in the complaint.

**No Fluoridation:** Voters in Salt Lake City, Fordyce, Ark., and Mari-boro, Mass., have rejected proposals to fluoridate city water. Fluoridation won approval in Hopewell, Va., West Memphis, Ark., Newton, Mass., and Peabody, Mass.

**Cutter Update:** Cutter Laboratories (Berkeley, Calif.) has made 15 out-of-court settlements totaling \$1.7 million to complainants who charged that the Cutter polio vaccine made in '55 gave users the disease instead of preventing it. Six of about 50 original cases are unsettled. The \$3 million in damages awarded by Cutter to date is about \$1 million more than provided by the firm's insurance coverage. Bank loans met the balance.

**Record Award:** The Colorado Industrial Commission set a precedent in the state by awarding \$11,466—the maximum allowable—in death benefits to the widow of a uranium miner who died of lung cancer. It was Colorado's first case in which the effects of radiation as a working hazard were judged. According to testimony, Robert D. Johnson, 43, operator of Johnson Mining Co., died of lung cancer caused by exposure to radioactive materials. Dr. Richard Archer, U.S. Public Health Service representative, testified that there is a direct causal relationship between lung cancer and prolonged exposure to large quantities of radon, a gas produced in uranium mines.

**Fluoride Hassle:** Reynolds Metals Co. has obtained authorization from the circuit court of appeals in San Francisco to sample alleged fluoride content of pasture land near its Troutdale, Ore., works over opposition of the land's owner, rancher Paul Martin. Martin has received three judgments against Reynolds on alleged fluoride damage and maintains a billboard on his property claiming the Reynolds plant is causing his cattle to die. Reynolds officials deny any damage and claim that the Troutdale plant has one of the best systems in the U.S. for controlling fluoride emissions.

## KEY CHANGES

**Al Dames** to vice-president and member of the board of directors, Hastings Plastics, Inc. (Santa Monica, Calif.).

**Richard V. Thomas** to president Goodyear International Corp. and a director, Goodyear Tire and Rubber Co. (Akron, O.).

**A. J. Buselli** to vice-president, Texas Butadiene & Chemical Corp. (New York).

**John Carlile, Jack Blane** to vice-presidents, Ekco-Alcoa Containers, Inc. (Wheeling, Ill.).

**Nolan B. Sommer** to general manager, Central Research Division (Stamford, Conn.), American Cyanamid Co.

**A. R. Rios** to vice president, Airco Co. International, a division of Air Reduction Co., Inc.

**James M. Fulton** to general counsel, Merck & Co., Inc. (Rahway, N.J.).

**Bryan Mitchell** to vice-president, and a director, Pan American Gas Co. (Houston), subsidiary of Pan American Petroleum Corp.

**John Collins** to president, Walworth Co. (New York), valves and pipe fittings manufacturer.

**L. L. Cooper** to secretary-treasurer, Products Research Co. (Burbank, Calif.).

**Leonard Strahl** to the board of directors, Martin Plastics Corp. (Philadelphia).

**Max A. Fritz** to president, The Arco Co. (Cleveland, O.), paint and varnish distributing division of Martin-Marietta Corp.

**Clare Wolf** to executive vice-president and a director, Tuloma Gas Products Co. (Tulsa, Okla.).

**Dave Mann** to comptroller, American Brazing Alloys Corp. (Pelham, N.Y.).

**Lee Samler** to vice-president; **Francis Ulrich** to assistant secretary; **William Brown** to assistant treasurer and assistant secretary, National Plastic Products Co., Inc. (Odenton, Md.).

**H. D. McGowan** to chairman of the board and chief executive officer; **Daniel I. Sargent** to president, Houston Chemical Corp. (New York), affiliate of Philadelphia and Reading Corp.

**Horace L. Tilghman** to board of directors, Virginia-Carolina Chemical Corp. (Richmond, Va.).

**Ivan M. Ponedel** to vice-president, Electro-Optical Systems, Inc. (Pasadena, Calif.).

**Robert R. Freeman** to manager of marketing; **Norman L. Deuble** to assistant to the general manager; **Clements H. Kromer** to financial manager, Refractory Metals Division (Detroit), Climax Molybdenum Co.

**Robert C. Hyatt** to general manager, Antara Chemicals Division of General Aniline & Film Corp. (New York).

**James P. Parker** to manager, general chemical laboratories, B. F. Goodrich Co. (Akron, O.).



CYANAMID

# Chemical Newsfront



**EASIER TO SEE, EASIER TO SELL!** From beer to bandages, packaging treated with CALCOFLUOR® WHITE brightener stands out on shelf or counter, boosts impulse sales. This remarkable product absorbs invisible UV-rays from fluorescent lighting, re-emits it as additional eye-catching brilliance. Grocery bag above is fortified with Cyanamid's Melostrength® resin. Use coupon for added information. (Dyes Department)





**PACKAGED DAYLIGHT.** These men are installing the new, all-acrylic Wasco Twin Dome made by Cyanamid. Twin Dome is a completely sealed, insulated, shatterproof, low-profile skylight with inner and outer domes available in any combination—clear, colorless, white translucent or reflective—to allow maximum control of light levels and heat gain. The domes are bonded to an aluminum nailing flange for easy installation and have an inch of “dead air” between them for exceptionally efficient insulation against heat and cold.

(Wasco Products Department)

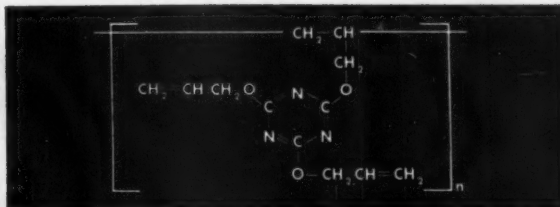


**VINYL CONVERTIBLE WINDOWS** stay transparent and flexible when the formulation includes CYASORB® UV light absorbers. Cyasorb causes vinyl windows to resist discoloration and cracking under the sun's damaging ultra-violet rays. It also retards the yellowing of the inner plastic layers in safety glass. Secondary benefits here may be better vision and the protection of the decorative color in the car's upholstery.

(Intermediates Department)

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- ☐ CYASORB UV Light Absorbers
- ☐ TRIALLYL CYANURATE (TAC)

Name \_\_\_\_\_

Company \_\_\_\_\_

Position or title \_\_\_\_\_

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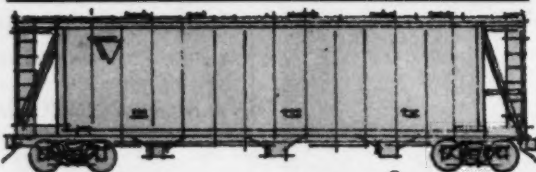


# 18

General American designed its new DRY-FLO CHEM Car to protect plastic resins from contamination and moisture pickup. It is being used by 18 of the major producers of polyethylene, polystyrene and polypropylene. The unique feature which makes this car better than any other for bulk transportation of contamination-sensitive, free-flowing solids is General American's

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CARTOONS BY RICHARD P. KLUGA

Salesmen don't read, will listen to records—but none fits the CPI.

## CPI: Ripe for Sales Aids?

On the theory that salesmen are a natural audience for a sales pitch, an eager array of companies and individuals are offering sundry sales training ideas to the chemical process industries.

CPI sales executives are paying attention to such devices as outside sales aids, consultation services, bonus schemes. Apparently, after having enjoyed a sellers' market for many years, chemical sales executives find that their sales organizations have become somewhat flabby. Problem: how to teach the men how to sell. Says a Dow Chemical sales training executive: "We look at any idea that comes along. So far we've bought only two or three films—on subjects such as how to be empathetic, communicate with people, and so on. Most of these films are too general for our purposes. If I could find one good film on industrial selling, I'd buy it."

**Being Presentable:** Dow recently held a series of three-day seminars for field sales supervisors in an attempt to train them to make good presentations to customers. The effort was mainly a matter of getting across the basic principles, teaching the use of the newer visual aids.

In such specific programs, many chemical companies bring in outside help—either because they want a fresh viewpoint, don't have the staff to man the program, or because they've hit a problem they aren't equipped to handle. Generally the larger companies will engage consultation services only for immediate problems; smaller companies might take on a consultant on a retainer basis.

Says one sales training consul-

tation firm: "I want to emphasize that these are not sick companies we deal with; they are usually the up-and-coming companies that don't want to waste time working out their own sales training techniques."

Many sales training executives feel reluctant about seeking outside aid, however. One large CPI company man said, "I'd find it difficult to pay a man to do a job I'm being paid to do myself." The advantage of a consultant, believes this executive, is to promote an exchange of ideas between companies, and he feels that the National Society of Sales Training Executives does this very well. "We all have to submit one idea a year. So I turn in one idea and get 110 back."

**Who Does It?** Three organizations were mentioned most often by major chemical companies as being helpful. They were Dartnell Company (Chicago), Porter Henry & Co., Inc. (New York), and Research Institute of America, Inc. (New York). The amount and types of services offered vary, with each company, but Porter Henry's catalog gives a good idea of what's available.

This company will help with or take over the whole job of recruiting salesmen, evaluating them, working out compensation plans, make field surveys of territories or customer industries, work up statistical data. The firm provides both individual and group training aids—mostly personalized, but some "canned." It prefers to specialize in sales training programs, and feels that it may be at its best in



Sales pep talks work better for insurance salesmen.





Many salesmen take correspondence courses on their own; few firms pay.

handling sales meetings. "We don't claim to be any brighter than our customers," Henry says, "but we do think we can help by bringing in experience, a fresh viewpoint, and an objective appraisal."

Henry also works with manufacturing companies in setting up sales training programs for distributors who handle manufacturers' lines. Henry works with the manufacturers to develop for their salesmen planned sales meeting that give the distributor the information he needs to sell. Also, Henry provides the necessary audiovisual aids to make such meetings effective; and he trains the manufacturers' salesmen to conduct the meetings.

Other companies offer similar services—some simply sell their clients a book or a record. Dartnell gave up direct consultation about 20 years ago, has since concentrated on using syndicated material. This includes manuals, monthly publications exchanging ideas, and a sales training institute that offers courses throughout the country to anyone interested.

Research Institute of America offers much the same, in the form of programs that include a series of publications.

A number of other service companies make their pitches more directly to the salesmen, are generally scorned by CPI sales training executives. For example, a company called Success Motivation Institute (Waco, Tex.) offers a collection of inspirational records (samples: "Think and Grow Rich," "I Can," "Selling the Sizzle," "How to Get Appointments by Tele-

phone"). One firm is cashing in on the recorded inspiration business with a record club, operated similarly to the Book of the Month Club. This is the Businessmen's Record Club, affiliated with the National Research Bureau, Inc. (Chicago).

**By the Book:** Still other companies offer books that promise amazing results—e.g., to help make a \$5,000/-year salesman into a \$50,000/year salesman. Generally, the techniques described in these materials are as sound as they are ancient, but are considered of negligible value by sales executives in the chemical process industries.

"Books on how to sell are not worth the paper they are put on," one Texas CPI sales manager says. "Most books are usually written by insurance salesmen, and you cannot use the same tactics in selling chemicals. Also books are not read by salesmen."

A Midwesterner says much the same thing: "Salesmen just don't read, so phonograph records can be good—if you do your own. But—in this business at least—the salesmen are no fools and you can't give them that inspirational stuff, which is the crux of most of the records you buy, and still keep their respect."

**Chemical Selling Different:** A strong feeling that selling chemicals is different, and that precomposed material will not fit into chemical selling schemes, has strongly colored CPI sales management's opinions on outside services. But chemical management does realize that it's having marketing trouble, and is eager to find any useful aids it can. Right now the best that management is finding are new ways to impart necessary product information to field salesmen and better ways to run sales meetings.

One East Coast consultant feels that the chemical industry is a prime violator of what he considers a cardinal rule: "Don't just get everybody together to go over the catalog sheets—teach them how to sell the new products." This is the first thing he works on when called in to run a sales meeting.

One user of such a service said recently, "It helped a lot. Many of the ideas they had we already knew or could probably have figured out, but it gave us something to show to research and management. They thought

that any time not spent in explaining the product was wasted. But they respected this kind of outside professional opinion."

Another company, which doesn't use such services, says this, however: "When we hire a salesman, as when we hire an engineer, we figure he knows his business, that he can sell. What we have to do is to teach him the products and where they fit."

**Gimmick Training:** Large companies often first approach an outside consultant when they are intrigued by a new gimmick, but don't know how to use it.

Many of these service companies, for example, have spent a great deal of time developing visual aids such as flip books. Most frequently this assignment is given to an advertising agency; but sales consultants point out that the advertising business operates in a world alien to personal selling.

An area that the consultants are beginning to get into heavily is the programming of teaching machines. These are used to get product knowledge across faster, eliminate sales meetings, and save salesmen's time for training in sales techniques. Porter Henry, for one, now has a teaching machine programmer on its staff, estimates the cost of such a project at between \$8-\$20 for each frame. About 50 frames would be the equivalent of one hour of training. Clearly, such programs wouldn't be useful unless a great many salesmen must be reached with one message.

Probably chemical sales departments are undergoing only a transitory period of looking for help, and will develop their own techniques eventually. But until this happens, they are still looking for outside aid, not finding as much as they'd like.



Teaching machines help get product information across fast, save time.



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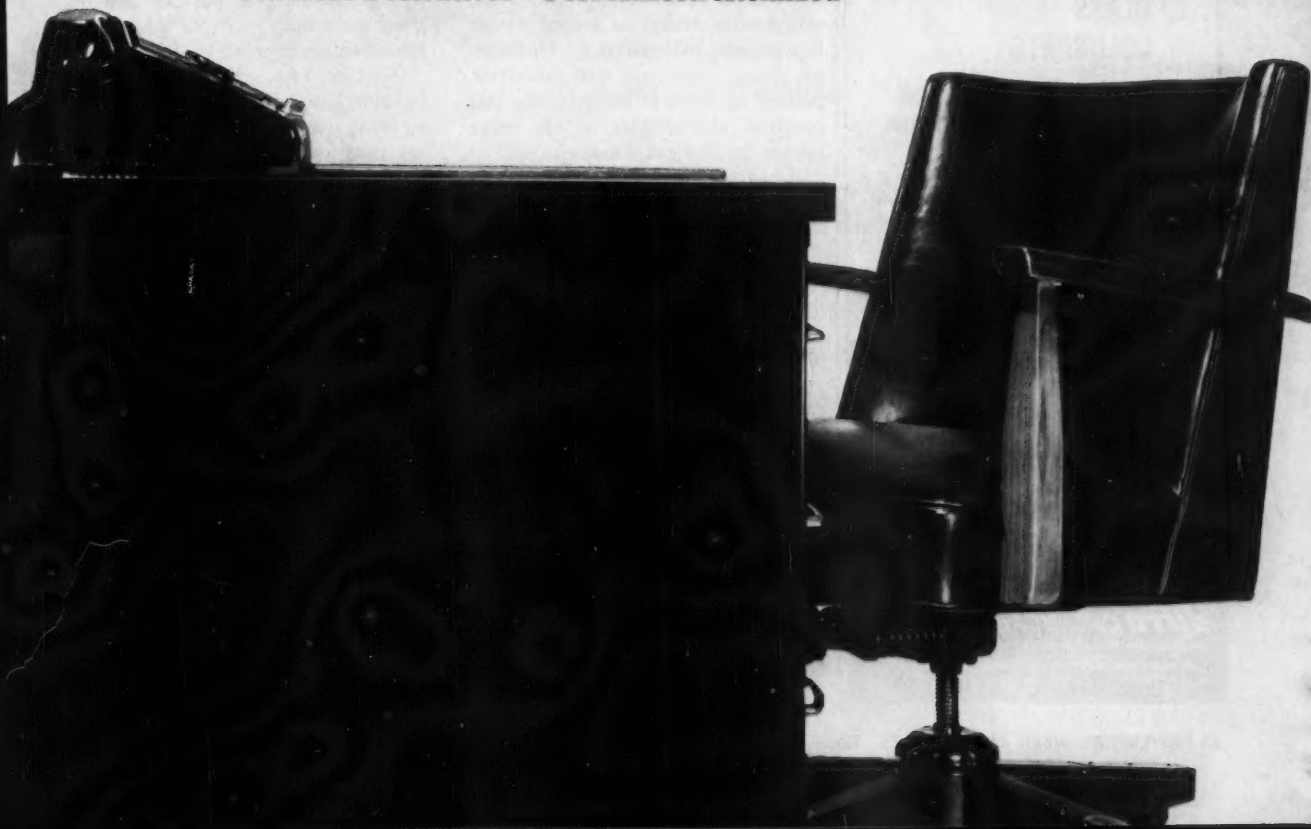


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## SALES



20,000 visitors saw latest in packaging machines at Detroit show.

## Packagers Peruse Plastics

More than 20,000 persons viewed \$6 million worth of packaging machinery at the Packaging Machinery Manufacturers Institute show in Detroit's giant Cobo Hall this month and saw plastics emerge as a clear winner in packaging material usage. However, the show, which had 220 exhibitors, pointed up some of the problems that confront film makers as the trend toward plastics gains momentum.

Packaging materials manufacturers feel certain that plastics will extend their lead in packaging by ever-greater margins, but worry that machine makers are not keeping up with their technological advances.

Polypropylene film producers hold most strongly to this view. They point out that they must not only manufacture and sell the plastic film but also are obliged to develop adaptors and conversion units for existing wrapping machines. Right now, polypropylene's major use is in bread wrapping, but film producers envision many additional jobs as soon as machinery manufacturers join in the development of new mechanical devices.

A spokesman for one polypropylene film producer asserts that most wrapping work with the new material is

being done on machinery originally designed for handling cellophane and waxed paper and later converted to polyethylene wrapping. "Now," he explains, "we have to put our film on those same machines. No wonder we have had some problems."

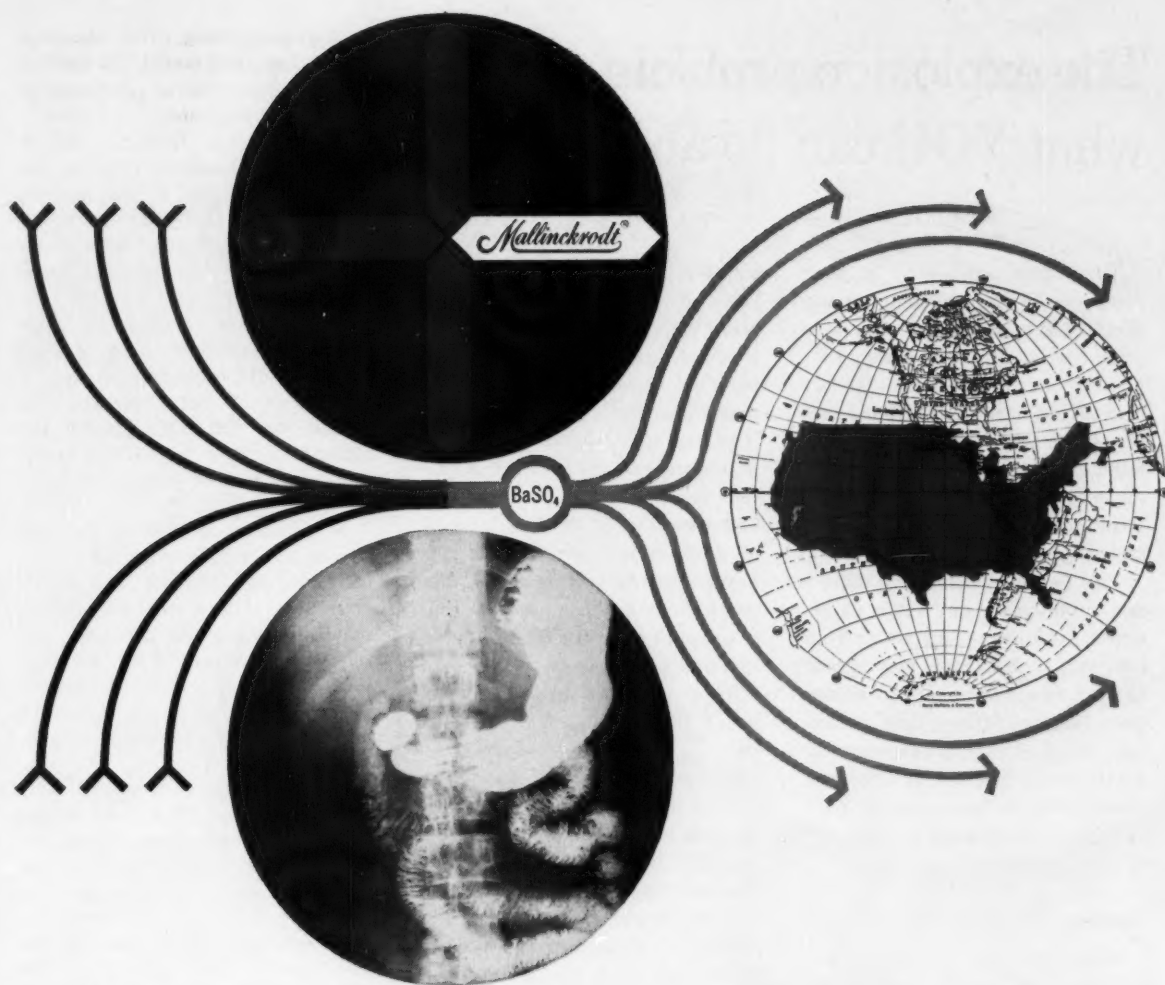
Another says, "Machinery people have only just now decided that polyethylene is here to stay and are cashing in on it by designing machinery for its use. We have no idea when they will recognize polypropylene in the same way. They were so used to cellophane that, after several years, they still aren't caught up with polyethylene."

Machinery men respond with the obvious answer: "We cannot afford to spend hundreds of thousands of dollars developing machinery until we have a pretty good idea that our investment will pay off."

"Besides," they say, "polypropylene film has some poor features—additional development is required on the part of the film producers themselves."

**What's New in Film?** Two new polypropylene developments were introduced at the show. AviSun Corp. showed a new high-slip polypropylene film designed especially for high-speed





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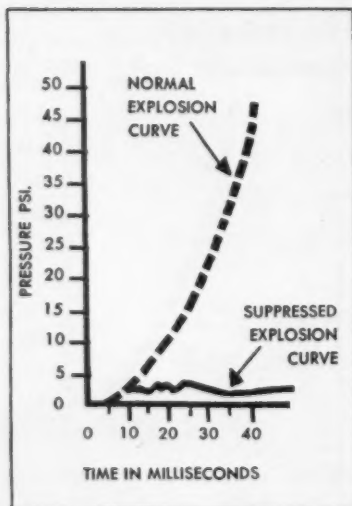
# The explosion problem... what YOU can do about it

The safety equipment in your plant may be the most complete and effective ever installed — *up to a certain point*. But why accept that point as your safety limit? The fact is, you can carry protective measures much nearer their actual maximum of safety — for plant, processing and people — with a Fenwal Explosion Protection System. And realize greater profits!

This Fenwal development detects and suppresses many types of potential explosions — instantly. Your own particular hazards may appear as dust, fumes or vapor... arising from fuel pulverizers, dust extractors, liquid storage tanks, chemical converters or reactors. Whatever or wherever the risks may be, a Fenwal system can be located and tailored to meet your requirements.

## Solving The Problem

It has long been recognized that explosion and explosive effect are not simultaneous with ignition — that from the moment of ignition there is a time lag, during which



pressure is built up to explosive level. A technical break-through came with the discovery that this time lag was measurable — and of sufficient duration to permit suppressive action against explosions. *And now, after long research and experimentation, the Fenwal Explosion System has been developed to take advantage of the time lapse — by detecting pressure rise and suppressing ignition at its source!* The graph shown here compares the time of pressure rise with time of detection and suppression.

Thoroughly proven in many different applications, Fenwal Explosion Protection Systems are excellent investments. For example, to various uninsurable processes these systems offer the *only* possible safeguards. They enable processes to operate closer to their limits — for maximum output. They permit less expensive plant construction. They reduce the profit-dissipating after-effects of an explosion: equipment damage, lost production and lost customers.

Fenwal systems have been tested with a variety of combustible materials. Extensive data has been gathered on each. Fenwal is equipped to demonstrate a system under conditions duplicating your own — and to consult with you on developing a complete protection system for your process.

For further information write Fenwal Incorporated, 1611 Pleasant Street, Ashland, Massachusetts.



## SALES

packaging machines. This, the company claims, will permit, for the first time, wide-scale use of polypropylene in bags and bag-liners.

And Cryovac Division, W. R. Grace, showed what it calls the first polypropylene film to be biaxially oriented in a balanced orientation process. The technique permits the film to shrink equally and uniformly in all directions.

A new type of Mylar polyester film developed specifically for existing make-and-fill packaging equipment was shown by Du Pont. The firm claims the film has greater seal strength and does not stick to crimp-seal jaws. The 50-gauge film has a yield of 21,000 sq. in./lb.

A spokesman for Kordite Co., division of National Distillers and Chemical Corp., was optimistic about the increased use of heavy-duty, high-density polyethylene bags for chemicals, fertilizers and cement. Pilot programs using new 5-mil polyethylene bags in place of 8-mil have been successful, he says, and are competitive in price with paper.

A new high-speed, completely automatic system of filling and closing multiwall and polyethylene bags was shown by Bemis Bros. Bag Co. The system combines an automatic bag scale, bag feeder and conveyor with a new automatic closing machine. The manufacturer claims it is capable of filling and closing twenty 2,000-lb. bags/minute, has handled as high as 24 bags. The system is applicable to any free-flowing product using open-mouth paper multiwall bags, requires no operator. An adaptor for polyethylene bags reportedly will be ready in three months.

The packaging machinery show is held every two years, was first put on in Cleveland in '56, with 143 exhibitors, about 8,000 visitors.

## DATA DIGEST

- **Deionization:** A brochure offered by Turbomatic, Inc. (8710 Science Center Drive, Minneapolis 27, Minn.) describes various factors of deionization. It cites specific examples of a number of deionization systems in a variety of applications, also discusses the place of deionization equipment in providing water with the proper degree of chemical purity.

- **Teflon:** Du Pont has issued a



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Average Particle Size	1.5 microns
Viscosity Index	Less than 1.1
Stability	No breakdown after 15 minutes at high speed in Hamilton Beach Blender

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# A CONDENSED FACT FILE ON EPOXIES BY FMC

## OXIRON EPOXY RESINS 2000, 2001, 2002

These epoxidized polyolefins have multiple epoxy and reactive double bonds as reaction sites—Versatile cure thanks to greater reactivity—Lower density means more volume per pound—Uses include reinforced plastics, adhesives, surface coatings, potting, encapsulating, propellant binder—For the full story send for:

Epoxy Data Booklet

## DIEPOXIDES

### Dicyclopentadiene Dioxide

This difunctional epoxide can be used both as a modifier for conventional epoxy resins and as a primary building block for epoxy resins—Provides resins with high heat distortion points—Formulations are liquid and have good pot life.

Technical Bulletin No. 95

### Limonene Dioxide

A colorless liquid combining the reactivity of an internal and an external epoxy group in the same molecule. Reactive diluent, pleasant odor and ease of handling are characteristics—Resin former-itself.

Technical Bulletin No. 96

## OLEFIN OXIDES

### Octylene Oxide

Reactive diluent for epoxy resins—Improves low temperature flexibility of bisphenol A-based epoxy resins—Controls exotherm—Copolymerization to give unique polyols for polyurethane manufacture—Pleasant odor, safe handling.

Technical Bulletin No. 71

### Dodecene Oxide

Versatile epoxide—Can be used as reactive diluent for epoxy resins to improve low temperature flexibility, intermediate in perfumes, plasticizer, stabilizer for chlorinated products, lubricant additive—Safe handling.

Technical Bulletin No. 73

### C16-C18 Olefin Oxide

Mixed epoxidized olefin combining long chain hydrocarbon structure with a reactive epoxy group, stabilizer for chlorinated products.

Technical Bulletin No. 74

## ALSO TERPENE OXIDES

### Limonene Monoxide

Technical Bulletin No. 81

### Alpha-Pinene Oxide

Technical Bulletin No. 82



For additional information on these products  
write for the bulletins mentioned above—

**EPOXY DEPARTMENT, FMC CORPORATION**

161 East 42nd Street, New York 17, N. Y.

## SALES

new brochure on Teflon tetrafluoroethylene resins aimed at design engineers. Called "New Design Data for Teflon," it updates the company's older "How To . . ." brochure on the subject. The two parts of the brochure cover strength and deformation; and thermal, wear and electrical properties of the material.

• **Isethionate:** A 10-page bulletin just issued by Antara Chemicals Division of General Aniline & Film Corp. (435 Hudson St., New York 14) lists the properties and uses of sodium isethionate, a difunctional chemical intermediate. The brochure describes the material's areas of reactivity and its chemical and physical properties.

• **Paraffin Wax:** A data sheet on chlorinated paraffin wax just issued by Pearsall Chemical Corp. (Phillipsburg, N.J.) describes the types available, suggested applications, and methods of handling and shipping. The company also has data available on special applications for the product.

• **Railroad Cars:** The '60 copy of the annual "Railroad Car Facts" has become available from the American Railway Car Institute (200 East 42nd St., New York 17). It gives extensive up-to-date statistics on the current status of railroad cars in the U.S.

• **Columbium Alloy:** A descriptive bulletin on columbium alloy for high-temperature applications is now available from Westinghouse Electric Corp. (Box 2278, Pittsburgh 30, Pa.). The bulletin covers the alloy's physical and mechanical properties, also gives information on recrystallization, oxidation, corrosion and fabrication.

• **Vitamin E:** Eastman Kodak Co.'s Distillation Products Industries has issued a 180-page annotated bibliography of vitamin E. The publication abstracts over 1,000 papers on the subject. It is being distributed by the National Vitamin Foundation (New York).

• **Hazardous Transportation:** The National Board of Fire Underwriters (85 John St., New York 38) has issued a guide suggesting state laws on the highway transportation of extra hazardous commodities.

• **Dictionary:** Reinhold Publishing Corp. has published the sixth edition of the Condensed Chemical Dictionary. The 1,250-page volume was edited by Arthur and Elizabeth Rose of Pennsylvania State College.



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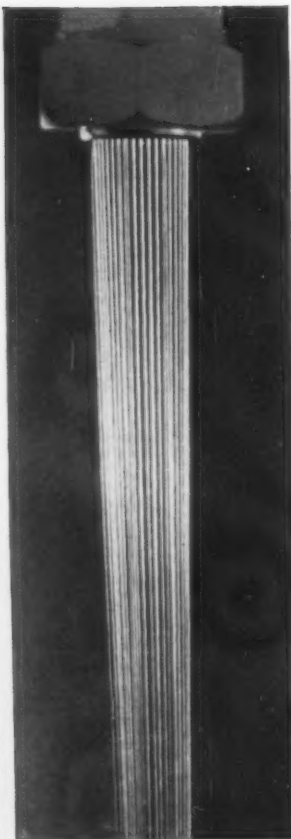
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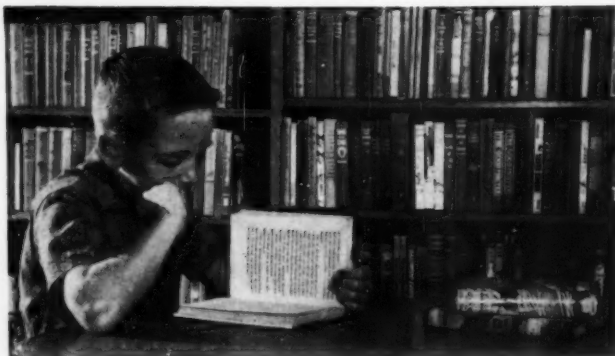


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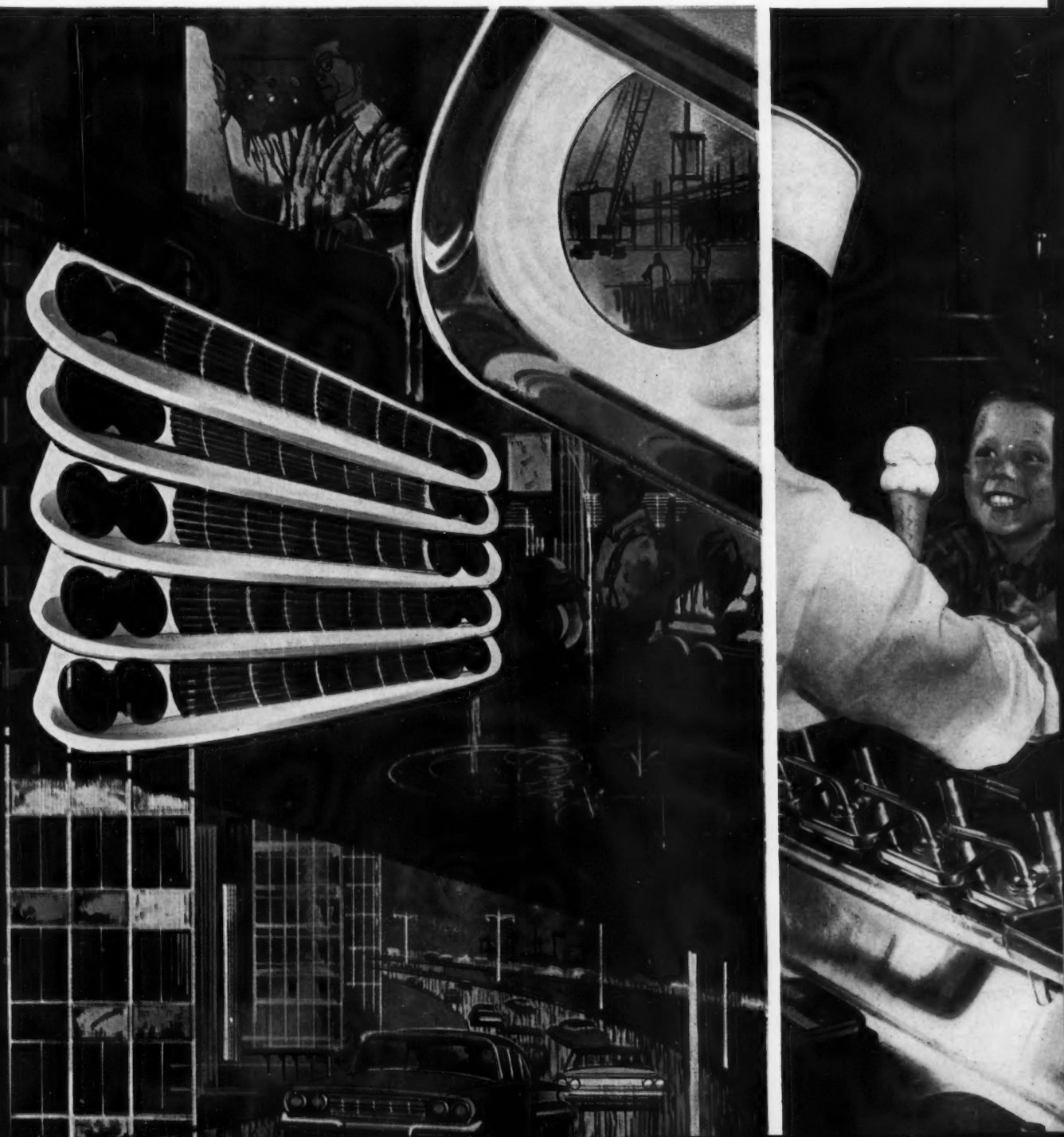


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# Washington Newsletter

CHEMICAL WEEK  
November 25, 1961

**The aluminum industry has a fresh approach to tariffs.** Beset by foreign competition and Administration proposals for freer international trade and lower tariffs, the major aluminum producers and trade associations have come up with a four-point program:

(1) Imports of aluminum products should be voluntarily restricted on a "best-year-to-date" basis, with percentage increases as the U.S. market expands.

(2) Foreign producers should get technical and marketing aid to broaden their output and to avoid one-product saturation of markets.

(3) Domestic producers should get a larger share of military orders through higher "buy-American" spread protection; a differential of up to 24%, instead of 6%, is sought. (The industry claims about 70% of all military orders are going to foreign firms.)

(4) Foreign duties on imports of U.S. aluminum ingots should be reduced, particularly in those countries where ingot production is insufficient.

Administration officials are taking more than a routine look at the plan. They are attracted by features aimed at stimulating new markets and diversification. But the industry request for greater "buy-American" protection in military purchasing is probably not looked upon favorably.

•  
**The federal water pollution control program has been upgraded** by Secretary of Health, Education and Welfare Abraham Ribicoff. He has designated Assistant Secretary James Quigley as his personal representative in the administration of the program. Quigley will be responsible for reviewing all water-pollution problems in which federal enforcement action might be brought.

•  
**The Russians are having troubles with water pollution, too.** This is clear from a new Commerce Dept. book titled "U.S.S.R. Literature on Water Supply and Pollution Control," a compilation of Soviet trade papers on the subject. Most of the blame for pollution is laid at the door of oil refineries, chemical plants (many of them new), synthetic rubber plants, mining and metallurgical installations, paper and pulp manufacturers and sewage.

It's apparent from the papers that up to now there have been no nationwide laws regulating the use and protection of water resources and no plans for conservation or pollution control. But one Soviet critic says that "at the present stage of industrial development, protection of water sources has ceased to be a simple sanitary-hygienic problem that could be solved by means of penalties or other prohibitive measures. It has grown into a complex national economic problem."



## Washington Newsletter

(Continued)

**Domestic consumption of industrial explosives hit a record** in '60, reports the Bureau of Mines. Total '60 consumption was 1.2 billion lbs., an increase of 12% over the previous high in '59. The gain was due to expanding use of ammonium nitrate as a blasting agent in the mining, quarrying and construction industries (*see also Market Newsletter, p. 106*).

•  
**Korea is opening the door to foreign investment**, with chemicals topping the list of needs. There is now no private foreign money invested in Korea, only funds poured into the country through U.S. military and foreign aid. But the Korean government, backed by private business groups, has outlined a development plan calling for private investment of \$1-2 billion during the next 10 years. Tax incentives are offered foreign investors along with use of the second cheapest labor supply in the world.

A small group of Korean business leaders is attempting to sell the plan to internationally minded U.S. companies. First big foreign investment needs, they say, are in the fields of chemicals and metallurgy—particularly fertilizers, insecticides and trace elements for soils. The Koreans also are putting out feelers for some U.S. firm to come in with a medium-sized oil refinery.

•  
**A new explosive-driven anchor has been developed** for oil tankers by the Army Corps of Engineers. Solid-rocket fuel and a revolutionary design were used to bring about one of the few basic changes in naval anchors since ancient times. The new anchor was designed to moor tankers at offshore points from which they can discharge oil through underwater pipelines. Solid-rocket fuel is detonated as the anchor touches bottom, driving it at least 34 ft. into the ocean floor.

•  
**New rules covering reimbursable advertising costs** on defense contracts have been handed down by the Pentagon. Under the regulations, a chemical defense contractor, for example, will no longer be reimbursed for institutional advertising in technical journals or for exhibit costs. He can still do such advertising, of course, but it cannot be charged to his defense contract. Only such reimbursable costs are for recruitment advertising or for acquisition or disposal of scarce materials.

The rules spell out the curbs voted by Congress this year and come as no surprise. Industrial advertisers already are lobbying for changes, but without much chance of success. As one Administration official puts it: "It's tough to get Congress to change its mind only one year after it passes a law."

•  
**Tank trucks now can haul finished chemical products in bulk.** The Interstate Commerce Commission has eliminated its long-time restriction against tank-truck hauling of chemical end-products that are intended to be packaged and sold to the public without further processing. The ruling applies to truckers with authority to haul liquid chemicals.





## 4-STAR COMMERCIAL

### about CELANESE INTERMEDIATES

#### TRIMETHYLOLPROPANE

**A good base to start from.** Celanese trimethylolpropane is making life easier for manufacturers of polyurethane foams and alkyd paints. Used as a base for polyethers in urethane foam production, TMP imparts improved toughness and heat distortion points, as well as better chemical resistance. As a component in alkyd coating resins, trimethylolpropane increases hardness, flexibility, color retention and resistance to heat and chemicals. And its price is very realistic.

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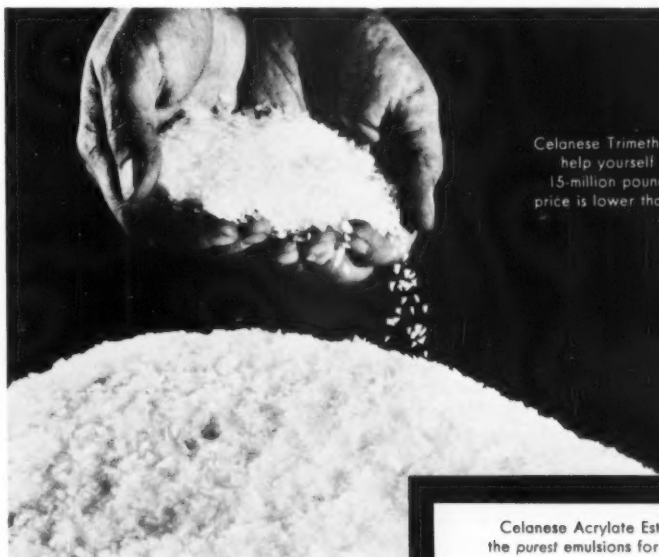
**Pure.** It's no secret that water-based paints are here to stay—nor that the best of them are made with the purest emulsion base. That's where Celanese shines—for the purest acrylates you can buy are those made by the unique Celanese beta-Propiolactone process. And you needn't take our word for it. Gas chromatograph results are proof-positive. We'll be glad to send you pertinent information on methyl, ethyl, butyl and 2-ethylhexyl acrylates.

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**We're big in 1,3-BG.** Celanese now has a 25-million pound production capacity for this versatile 4-carbon diol. Fact is, we're the only U.S. producer now offering 1,3-butylene glycol in commercial quantities. Whether you produce polyesters, polyurethanes, surface active agents, polymeric plasticizers, humectants, or coupling agents, only 1,3-BG does so many things so well. There's no rationing on 1,3-butylene glycol. Get all you want promptly from Celanese.

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**For more information on any of these Celanese intermediates, mail the coupon on the reverse side of this page.**

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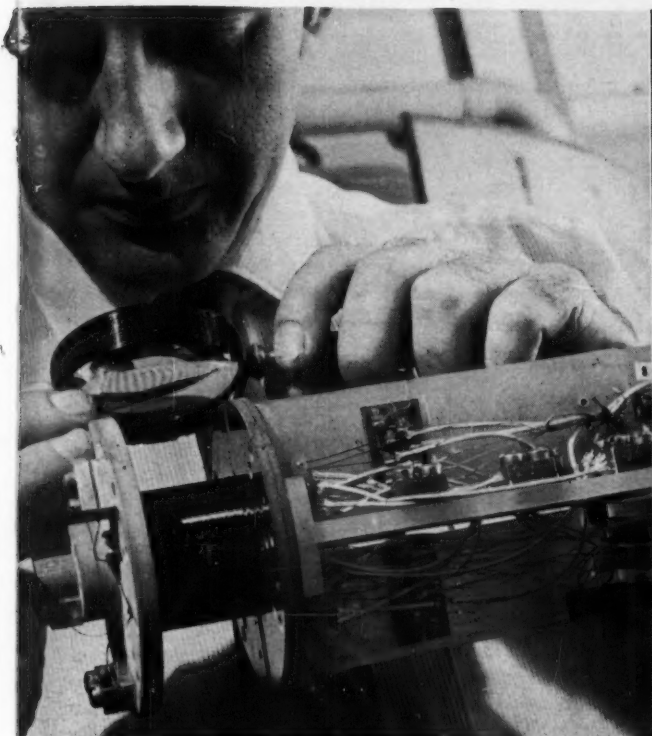
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Westinghouse Corp.'s first superconducting magnet produced a field double that of a 20-ton electromagnet.

Researchers at Bell Labs use this furnace to make superconducting columbium-tin coils for high-strength magnets.

## Probing New Fields in Magnetic Research

Reports on extra-high magnetic fields achieved with new superconducting magnets highlighted a pair of major conferences this month at Massachusetts Institute of Technology (Cambridge, Mass.) and Phoenix, Ariz.\* Novel materials are being used to make these magnets, which have promising uses in communications, propulsion and power generation.

Bell Telephone Laboratories, Westinghouse and M.I.T.'s Lincoln Laboratories (Lexington, Mass.) all engaged in a spirited game of "magnetic poker" at the M.I.T. meeting. Bell came out on top with a magnetic field of 67 kilogauss attained in a 4-in.-long solenoid made with columbium-tin wire. Westinghouse and Lincoln Labs reported fields of 58 kgauss and 50 kgauss, respectively, both with co-

lumbium-zirconium solenoids. Westinghouse had previously disclosed a 43-kgauss solenoid. (*CW Technology Newsletter*, Sept. 30).

Bell also reported on a vanadium-gallium alloy that promises even higher fields (*CW Technology Newsletter*, Nov. 18). And news of other materials at the Phoenix meeting covered developments in thin films, ferrites, rare earths and improved alloys.

Great savings in power and space are the principal advantages of the superconducting magnets. For example, a conventional 88-kgauss laboratory magnet requires 1.5 megawatts of power, a 1,000-gal./hour cooling system and the equivalent of several large rooms of space; total cost is several hundred thousand dollars. An equivalent superconducting magnet, according to Bell's J. Eugene Kunzler, could be housed in a cryostat measuring 3 ft. high by 1½ ft. in diameter and weighing a few hundred pounds.

Power requirement: virtually zero. Cost: a few tens of thousands of dollars.

Immediate use for high magnetic fields is in laboratory studies of materials. The superconducting magnets are expected to make high fields much more widely available. Other applications are seen in plasma research, magnetohydrodynamic (MHD) propulsion and power generation, containment of thermonuclear reactions, conventional power generation, novel communications devices and shielding of radiation in space vehicles.

**Source of Power:** Key to the advantages of superconducting magnets is, of course, the principle of superconductivity, by which certain materials have zero electrical resistance below specific critical temperatures. Theoretically, a permanent magnet could be made by winding a superconducting wire into a coil, cooling the material below its critical temper-

\*The Air Force's International Conference on High Magnetic Fields, held at Massachusetts Institute of Technology, and the Conference on Magnetism and Magnetic Materials, sponsored at Phoenix by the American Institute of Electrical Engineers and the American Institute of Physics.



## RESEARCH

ature, and inducing a current in the coil.

The problem encountered by researchers who tried to make such magnets in the '30s was that many superconductors develop electrical resistance in the presence of even a small magnetic field. In essence, the magnet destroys itself.

Recently, however, materials have been found that retain their superconductivity at relatively high magnetic fields. Last year, Stanley Autler of Lincoln Labs reported a columbium solenoid that maintained a field of 4.3 kgauss at 4.2 K., and the race was on. Bell's Kunzler predicts ultimate useful ranges of 80-100 kgauss for columbium-zirconium magnets and 100-200 kgauss or more for the columbium-tin devices, once engineering problems are solved.

Highest continuous field yet attained by a magnet: 126 kgauss reached earlier this year at M.I.T.'s National Magnet Laboratory (Cambridge, Mass.) using a copper magnet developed by Henry Kolm (*CW Technology Newsletter*, July 22). However, a 1.88-megawatt power supply is required to attain this field, and an 8-megawatt supply is being built to raise the field further. Another magnet being developed at M.I.T. is intended

to produce a continuous field of 250 kgauss.

**Top Contender:** The columbium-tin compound ( $\text{CbsSn}$ ) is presently the leading superconducting magnet material in terms of attainable field. Earlier this year, Kunzler and coworkers at Bell determined that this compound not only retained its superconductivity in an externally induced field of 88 kgauss (limit of the available laboratory magnet), but that it also sustained an extraordinarily high current density (150,000 amps./sq.cm.) at that field.

Previous studies with a superconducting molybdenum-rhenium alloy had proved that solenoid characteristics of a material could be predicted from test results on samples of the material. The major hurdle to be overcome, however, was in fabricating the solenoid. The columbium-tin compound is brittle and cannot be drawn into wire.

Bell's solution to this problem was placing stoichiometric proportions of columbium and tin powders in a thin columbium tube, sealing the ends, swaging and drawing the assembly into wire, winding the solenoid and finally heating to react the powdered metals.

An alternate method for making the

same compound has been developed by Radio Corp. of America. Details of the process have not been disclosed, but it is called the "irreversible chemical transport method", and it results in a single-phase deposition of the compound (either as a crystal or as a layer).

**More Workable:** The processing problem can be avoided by use of the columbium-zirconium alloy, but only with a sacrifice in attainable field strength. And alternate heating and cold working of the alloy has been found by several investigators to increase its current carrying capacity.

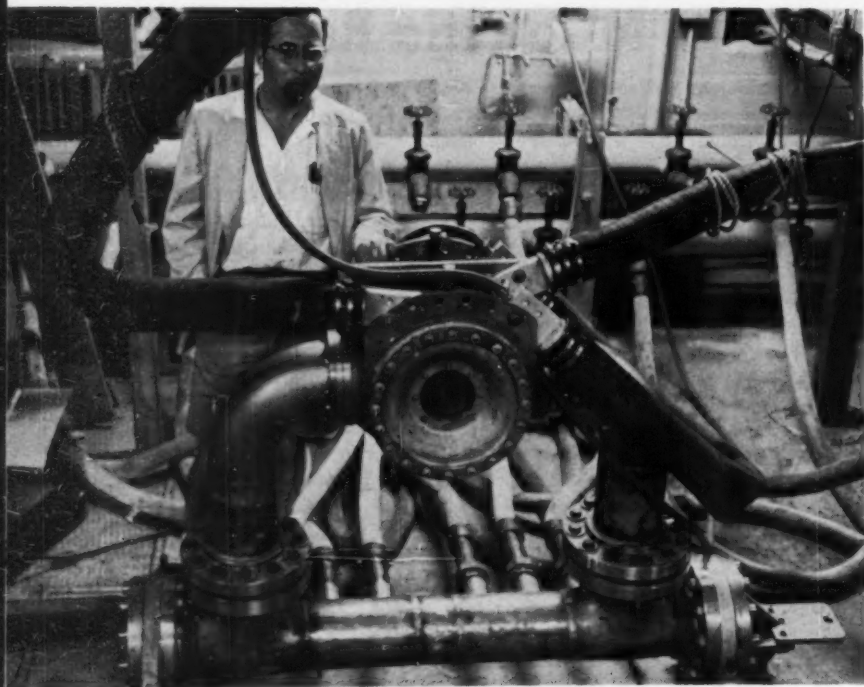
The composition of the alloy can also be varied to reach an optimum balance of current density and field strength. Kunzler suggests that different compositions would be useful in different layers of a single magnet. Wah Chang Corp.'s Albany (Ore.) Division is currently supplying 10-mil columbium-zirconium wire (either 25% or 33% zirconium) in lengths above 1000 feet.

Atomics International (division of North American Aviation) reported in June that columbium-zirconium wire could sustain a current density of 100,000 amps./sq.cm. at 30 kgauss. Since then Westinghouse and Lincoln Labs have built and tested their laboratory solenoids. And M.I.T. is currently building a 4-ft.-long columbium-zirconium solenoid with a working space 8 in. in diameter. (Working diameter of the small solenoids is about  $\frac{1}{4}$  in.) The large magnet is designed to produce a field of 40 kgauss.

**No Limit Yet:** The vanadium-gallium alloy reported by Bell at the M.I.T. meeting indicates that the ceiling has not yet been reached on achievable field strengths. Preliminary data on bulk samples in external fields of up to 80 kgauss at different temperatures were extrapolated to absolute zero.

Estimates of the material's critical field vary from 350-750 kgauss, depending on whether the extrapolation is parabolic or linear. Experience with columbium-tin indicates that the true curve lies between these two extremes, thus leading the Bell team to estimate a critical field of over 500 kgauss for the material.

Different vanadium-gallium compositions were tested, with the best result obtained on a sample consisting



M.I.T.'s Kolm checks record-breaking 126-kgauss copper electromagnet.



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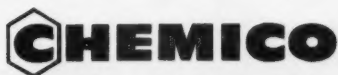


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of 2.95 parts of vanadium per part of gallium. Present efforts are being directed at making a wire of the resulting brittle material.

**On Other Fronts:** Among the developments reported at the Phoenix meeting was a thin-film permalloy (nickel-iron alloy) sandwich construction that switches signals in 10 billionths of a second, while allowing a larger output signal than is possible in single layer films. International Business Machines Corp. researchers, who reported the development, see it as a possible step toward practical, large, thin-magnetic-film computer memories.

Bell Labs reported new data on the recently discovered insulating ferromagnet, anhydrous chromium tribromide. And properties of a series of rare-earth ruthenates were reported by a team from France's Laboratoire d'Electrostatique et de Physique du Metal.

Use of iron-cobalt phosphides as possible new "hard" (permanent) magnetic materials was discussed by N. V. Philips Gloeilampenfabrieken (Eindhoven, Netherlands). These materials were found to have much better properties than either iron phosphide or cobalt phosphide.

The coming months should continue to see great strides in the magnetic arts, especially in the fast-moving superconducting field.

## Cotton Warms Up

Cotton stretch products made by chemical finishing are now the object of full-dress fiber research, according to C. H. Fisher, of the U.S. Dept. of Agriculture's Southern Regional Research Laboratory (New Orleans).

Fisher made this observation at the recent Cotton Chemical Finishing Conference in Washington, D.C. (sponsored by the National Cotton Council of America), where a raft of other research work with cotton was discussed.

Fisher singled out four promising approaches to making stretch cotton products: (1) the use of cross-linking agents to set crimp in yarn; (2) slack mercerization of fabric; (3) breaking hydrogen bonds in the cotton cellulose molecule and reestablishing them in other positions; and (4) chemically modifying cotton yarns to make them thermoplastic.

Dimethylol ethylene urea (DMEU) was found to provide the best recovery characteristics and over-all elastic properties of all the cross-linking agents tried. Triazones showed the best elongation, and melamine-formaldehyde required the greatest amount of energy to uncrimp. (Test yarns are knitted into tubing, the cross-linking agent added and tubing so treated is tested for elongation, recovery, breaking strength and energy to uncrimp.)

Slack mercerization—the shrinkage of cotton textiles without tension in a mercerizing caustic solution—is one of the oldest and least expensive chemical treatments for producing stretchable woven fabrics. As Fisher pointed out, however, commercial products made this way stretch in only one direction, and two-way stretch is still a research goal.

The breaking of hydrogen bonds (which can be reformed elsewhere along the molecule) has been done with selected amines (particularly ethylamine), sodium hydroxide, and concentrated water solutions of lithium bromide, lithium chloride and calcium thiocyanate. This gives a stretchable type of fiber.

Chemicals that simply reduce hydrogen bonding (and in which bonds are not remade) also impart a type of thermoplasticity to cotton. The benzyl ether of cotton cellulose can be heat formed at 125 C and above. A phenyl isocyanate derivative of the cellulose has a much higher transition temperature: about 185 C. Results so far show that pleated cotton materials retain their original shape after 20 home launderings and tumble-drying cycles.

**Elimination of Yellowing:** R. B. LeBlanc and A. P. Ingram of Dow Chemical (Freeport, Tex.) reported on their research to eliminate bleach-induced yellowing of APO-finished cotton. APO—tris (1-aziridinyl) phosphine oxide—can be used to make cotton cloth crease resistant, but the fabric yellows when ironed after chlorine bleaching (*CW*, Sept. 23, p. 47).

The Dow team found that the yellowing was caused by three reactions: (1) the formation of primary amines after hydrolysis of the phosphorus-nitrogen bonds; (2) the presence of aldehyde groups resulting from reduction of alcohol groups (which are made as water-opened aziridine rings on APO are oxidized by hypochlorite); and (3) a combination of amine

and aldehyde that yields a base that decomposes to yellow chromophore when scorched.

The techniques for keeping down the yellow color are based on reducing the number of water-opened aziridine rings which form the aldehydes. This can be done by using a higher-purity APO, using a lower-temperature APO bath (0-25 C) and by using a nonaqueous bath such as alcohol. Also, bleaching with sodium perborate, rather than the hypochlorite will reduce the yellowing effect.

**New Contract:** Also discussed at the meeting was a one-year contract recently awarded by the Cotton Council to the Harris Research Laboratories (Washington, D.C.). Object: to develop cotton fabrics with wool-like properties. Conventional finishing techniques for flat wash-wear fabrics are not suitable for producing fluffy (lofty) cottons. Consequently, part of the research project will include finding the right combination of treatments that will produce this fluffy quality—and maintain it after laundering. The Harris project will also concentrate on increasing the insulating power of the cotton-base fibers for winter-weight fabrics.

## Measles Immunization

A recent international conference at the National Institutes of Health (Bethesda, Md.) spotlighted new advances in measles immunization.

NIH is now considering the approval of three main types of vaccination: (1) inactivated (killed) virus vaccine; (2) attenuated or modified live virus vaccine; and (3) simultaneous injections of both live virus vaccine and gamma globulin, a blood plasma component that contains measles antibodies.

The first type of vaccination was shown to be effective by researchers at the Dept. of Biologics Research, Chas. Pfizer & Co., Inc. (Terre Haute, Ind.). Pfizer's Joel Warren reported that the inactivated virus vaccine was effective in stimulating the production of neutralizing antibodies in "a significant number of measles-susceptible children."

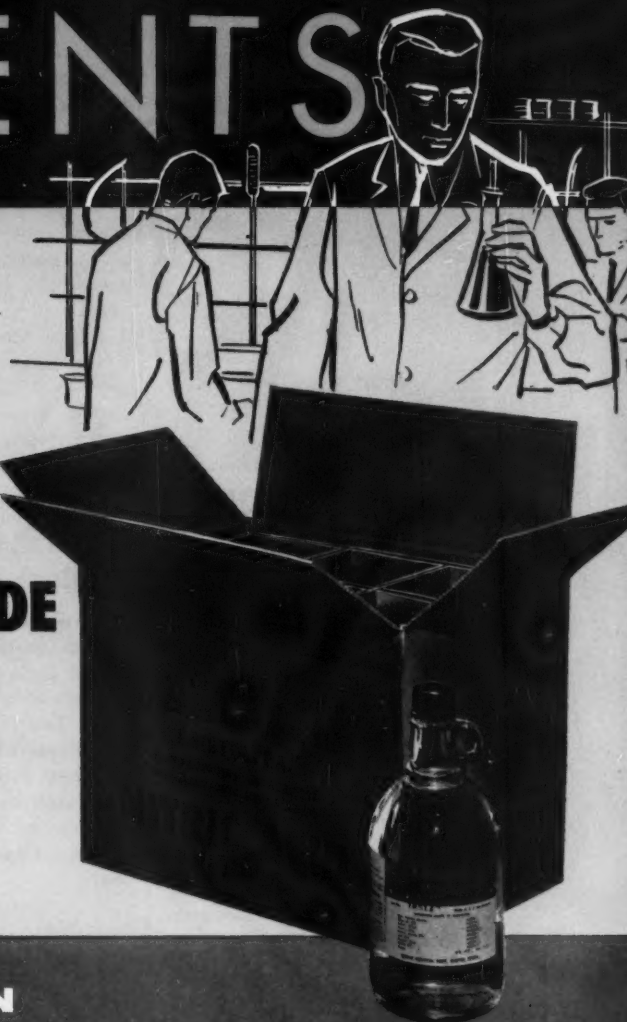
Warren points out three reasons why the vaccine might be permanently effective: (1) the long measles incubation period permits a person who has once been inoculated to redevelop



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## RESEARCH

antibodies even though they may not be in the bloodstream at the time of exposure; (2) since even the smallest amount of antibodies is enough to abort or modify measles, the person's response can be minimal; and (3) because measles is highly contagious and widespread, there is frequent opportunity for repeated exposure, which would reinforce the body's ability to redevelop antibodies.

The Pfizer vaccine, however, like the two other classes of vaccine under evaluation at NIH, can be proven successful only by clinical tests, now under way.

Pitman-Moore Co. (Indianapolis), a division of Dow Chemical Co., has been engaged in research and clinical tests on all known types of injectable measles vaccine. The firm says it is prepared to produce doses of approved vaccine when official standards and requirements have definitely been set.

## Nuclear News

A completely equipped activation analysis laboratory, reportedly the first offered by a single manufacturer, is now available from Nuclear-Chicago Corp. (Des Plaines, Ill.). The laboratory, displayed at the recent Atomfair (Chicago), includes a neutron generator, sample-transfer system, scintillation detector assembly and automatic gamma-ray spectrometry instrumentation.

By bombarding a sample with neutrons from the generator, chemical elements in the sample can be detected—quantitatively as well as qualitatively.

Other, related equipment was discussed at the American Nuclear Society meeting, held in conjunction with the Atomfair. Phillips Petroleum, for example, has built a high-density concrete-shielded cell for handling several hundred curies of 1-mev. gamma radiation. Located at the Materials Testing Reactor (Idaho Falls, Ida.), the hot cell will be used for the chemical separation of alpha and gamma emitting particles.

Reactor fuel materials (*CW*, Nov. 18, p. 167) were the subject of two sessions at the fair. Among the discussions: Atomics International's work on aluminum powder metallurgical alloys and General Electric's developments in the growth of nickel-europium oxide cermet by thermal cycling.

## EXPANSION

• The federal government's first water-pollution laboratory will be located at Oregon State University (Corvallis, Ore.) It's expected to be in operation within two years, will employ about 150 persons, cost \$2.5 million.

• Tennessee Eastman Co. (Kingsport, Tenn.) will build a development laboratory for the Organic Chemicals and Acid Divisions at the company's headquarters. Completion date: spring of '62. Work will include processes for ester and ketone solvents, dye intermediates, antioxidants, gasoline additives and other TE products.

• A new company, Instruments, Inc. (Wilton, Conn.), has been founded to develop, produce and market laboratory instruments and related devices. First product will be the Auto-cord, a recording accessory for ultraviolet spectrophotometers.

• Lockheed-Georgia Co. will lease Georgia Nuclear Laboratories (Dawsonville, Ga.) from the U.S. Air Force, will continue to operate the radiation research facility. The current research program: effects of radiation on various materials at very low temperatures. This cryogenic project, sponsored by National Aeronautics and Space Administration, extends until '64.

• Schwarz BioResearch, Inc., producer of biochemicals and radiochemicals for life science studies, opened new laboratories and production facilities at Orangeburg, N.Y.

• Construction of a \$400,000 addition to Strassenburgh Laboratories (Henrietta, N.Y.), a division of Wallace & Tiernan Inc., has started. Strassenburgh will manufacture two more products, Desenex and Caldesene, in the building. The move is one of several steps to consolidate W&T's pharmaceutical divisions.

• Structure-Activity Research, Inc. (Oxford, Miss.), has been formed in cooperation with the University of Mississippi for research work in chemical medicinals.

• A new laboratory group that will develop and conduct special tests on orders requiring complicated engineering, unusual designs or new materials has been established by Taylor Fibre Co. (Norristown, Pa.). Called the physical analytical chemistry group, the new unit will also do applied research on plastics.







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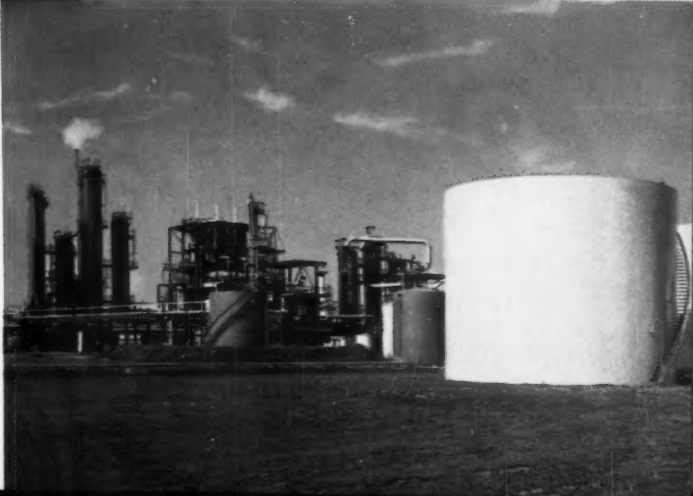
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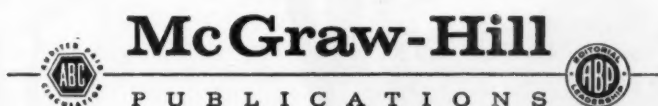
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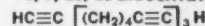
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1.3 millimicrons  
In water or organic  
media

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Liquid, b.p. 186°C  
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Convertible into a saturated  
hydrocarbon, unsaturated and  
saturated dibasic acids,  
diamines and other derivatives.



**Diamond Chemicals**



Labor—abundant and inexpensive—is big strength of Japan's contractors.

## Japan:

A vigorous young contracting industry is expanding in Japan at the rate of almost 50%/year. Spurring this growth: Japan's chemical process industries, which will spend about \$460 million this year on new plant projects. Within the next five years Japanese contractors could win the bulk of engineering work in southeastern Asia.

Already giving rugged competition to U.S. contractors, Japanese builders are currently bidding on plants in India, Pakistan, Indonesia, Malaya, Singapore and Australia.

Latest developments: Chiyoda Chemical Engineering and Construction Co. (Tokyo), with C. Itoh and Co., signed contracts for a 10-tons/day polyvinyl chloride plant in the Philippines and a 5-tons/day benzene hexachloride plant in India. And Chiyoda, with Marubeni-Ida, also will put up a 45-tons/day polyvinyl chloride plant in India.

In Japan alone, CPI capital spending today (see table, p. 68) is about a quarter of the comparable U.S. figure. Japan's population is about 90 million, half that of the U.S., and its current industrial growth (roughly 20%/year) is expected to boost CPI capital spending to \$1 billion/year in five years.

About a dozen Japanese contractors currently serve this market for design engineering and construction. Four — Toyo Engineering (Tokyo), Nihon Gasoline (Yokohama), Niigata Engineering (Tokyo), and Chiyoda — offer plant engineering and design as well as construction. Only Chiyoda currently offers completely integrated services from process research through process design, engineering, and construction.

Chiyoda's skyrocketing growth illustrates the success that the full-service contractor can win in Japan. The firm, formed in '48, has expanded more than fivefold since '56. Today it is one of the largest contractors in the world, has a staff of 1,632, including 895 engineers and about 350 people employed in a fabricating shop.

**Inside Look:** How good are Japan's engineering contractors? And perhaps more important: Can Americans suc-





# New Force in World Engineering

cessfully compete for engineering business in the Far East? Japanese industrialists and U.S. firms having experience in Japan agree on these points:

- A highly developed basic industry and a professional engineering attitude heavily influenced by the universities provides a good supply of competent engineers.
- An overabundant supply of drafting (technical) and casual labor gives Japanese contractors the dual advantages of low cost and speed.
- Japanese contractors buck stiffer competition from foreign firms than do U.S. contractors.
- Americans who would share the profits of the current Japanese building boom should be prepared to offer processing know-how and scheduling experience, let the Japanese supervise and do their own work.

**From Ships to Petrochemicals:** Japan's shipbuilding industry, biggest in the world, provided the platform on which the process industries were built. A modern naval vessel has much in common with a process plant: both have miles of pipe and electrical wiring, hundreds of instruments, innumerable structural problems; and a need for power in the form of diesel engines, steam or electricity.

And the Japanese have a mature system of design standards. The refining industry (current capacity: roughly 500,000 bbls./day) has used Esso specifications as a base since '49. And the Japanese government has established an official set of design specifications, called JIS, that is almost an exact duplication of U.S. standards—e.g., API, ASME, ASTM. (All measurements are, by law, in the centimeter-gram-second system.)

Established since World War II, the Japanese educational system, patterned after the U.S. system, now has 25 universities at which engineering is taught at both undergraduate and graduate levels. Chemical engineering is a routine course in these universities.

Japanese engineers keep close ties with their alma maters, find jobs through their professors. And when an industrial manager needs engineers, he is likely to ask his former professor to

recommend promising students.

The combined influence of these schools, common standards and basic industries has produced engineers who are said to be fully as competent as their U.S. counterparts in the design of structures, foundations and electrical facilities. In design of most older processes—e.g., crude oil refineries, catalytic crackers, petrochemicals, basic chemicals and textiles—they compare favorably to U.S. engineers. And although the Japanese lack know-how in some of the newer processes, they're rapidly acquiring it.

At the same time, process know-how is quickly disseminated; there are no secrets. U.S. firms almost unanimously report that while the Japanese make a great show of secrecy, it is only a short time before the so-called secrets of new processes turn up in designs everywhere.

**More Hours in Less Time:** Against this background Japan's contracting industry is now bursting into action, drawing heavily from the ample supply of both technical and casual labor.

Japanese contractors have the reputation of being the fastest builders in the world. But their speed stems in large measure from manpower abundance rather than from efficiency. Japanese normally work a 10-hour day, frequently a six-day week in engineering design. On construction projects, a seven-day week is standard.

Because of low-cost labor (average flat rate is \$1.50, compared with \$5 in the U.S.) there is little pressure to shortcut design methods (use of models, photo-drafting, etc.). The Japanese design drawings are more carefully detailed than those done in the U. S.

Whereas the availability of construction or casual labor is one of U.S. contractors' major problems, Japanese casual labor—always on subcontract—is so plentiful that most Japanese maintenance is subcontracted as well.

**Progress with Paternalism:** While Japanese contractors are organized much like U.S. counterparts (with process departments, project engineers, design-drafting rooms and procurement departments), they have also developed some distinctive features, most

of which stem from Japan's paternalistic system in industry.

A man is never fired, virtually never quits to go to another job. As a result, most drafting-room staffs are more stable than those in the U.S. And individuals tend to specialize to a greater extent—e.g., in rating heat exchangers, designing pressure vessels, etc. While this may have some limitations as far as the individual is concerned, it aids the firm as a whole in rapidly building experience. U.S. companies report that association with only one unit of a process type is usually enough to equip a Japanese contractor to build a similar unit without supervision.

Meanwhile, methods vary. Observers report that it is quite common to see one subcontractor on a construction project using old-fashioned hand-labor methods while another subcontractor on the same project has men skillfully manipulating the most modern cranes.

Most of the process plant engineering contractors have grown out of large operating companies. Chiyoda Chemical, for example, stems from Mitsubishi Oil. And many engineering contractors have also branched out, are fabricating their own equipment.

Japanese contractors are said to assume much greater responsibility for detailed design than do prime contractors in the U.S. Whereas a U.S. firm might specify only the requirements of a heat exchanger, for exam-



A. Tamiki (above) has built Chiyoda contracting firm fivefold in 12 years.



## Japanese Chemical Plants Under Construction in 1961

(Figures in millions of dollars)

Company	Product	Cost
Asahi Chemical	acrylonitrile	4.1
Asahi-Dow	styrene	1.6
Kyowa Fermentation	petrochemicals	4.3
Kokan Chemical	styrene	3.1
	polystyrene	4.7
Showa Denko	acetaldehyde	5.5
Showa Neoprene	neoprene	10.0
Shin Nihon Chisso	petrochemicals	2.1
Sumitomo Chemical	ethylene	12.1
	propylene	.9
	polyethylene	73.6
	polypropylene	5.8
Tonen Petrochemical	petrochemicals	10.9
Japan Synthetic Rubber	butadiene	63.1
Nippon Petrochemical	ethylene, etc.	120.0
Nihin Geon	SBR rubber	6.5
Nitto Chemical	acrylonitrile	3.2
	polyethylene	16.1
Nisseki Detergent	alkylbenzene	4.0
Furukawa Chemical	polybutane	1.0
Maruzen Oil	ethylene, propylene	30.0
	petrochemicals	83.3
Mitsubishi Chemical	acrylonitrile	3.8
Mitsubishi Petrochemical	polyethylene	18.9
	styrene	7.5
	polypropylene	5.6
	epoxy resin	1.2
Mitsui Chemical	polypropylene	8.0
Mitsui Petrochemical	propylene	16.6
Mitsui Polychemical	polyethylene	14.0

ple, the Japanese firm completes a detailed design for the fabricator to follow.

**Operators Are the Obstacle:** Japanese operating companies, for the most part, have spawned the country's young contracting industry, but the same firms currently stand as the biggest bar to the latter's growth. In the U.S. only 15% of CPI projects are built by plant owners, but in Japan operating firms still act as their own prime contractors on all but major projects. And even on these, it is customary to prepare a process specification, then turn it over to the contractor for detailing.

This hurts most where it counts most—in processing know-how. Most new processes are still imported by Japan under license from foreign firms. Most of the licensing agreements are made directly with the Japanese operating company.

And, since most operating companies prepare their own process designs, the Japanese contractors are hard put to keep abreast of new developments. Even when the foreign process is licensed through a Japanese contractor, the process design is usually done by the foreign firm. Exception: Chiyoda, which has been able to amass a backlog of process know-how.

**Processes—the Password:** Thus the most effective way in which an American firm—contractor or operating company—can make an entry into Japan's contracting business is through proprietary processes. Otherwise, U.S. firms report, the Japanese want none of them. Japanese engineers resent foreign supervision. And the oversupply of labor makes imported labor unpopular.

On the other hand, say U.S. engineers, the Japanese lag in scheduling. They have not learned, generally, to use project schedules to control the distribution of manpower and materials, as is done in the U.S. Some firms operating in Japan say that Japanese engineers lack coordination experience as well, although part of this impression may be due to language barrier. Consensus: the weakness in scheduling and coordination stems from the superabundance of labor.

**Outlook:** The coming year will probably be a turning point for the Japanese contractors. If they win overseas contracts, begin importing processes that they can sell to Japanese operating firms, their industry is likely to develop along U.S. contracting industry lines. But if Japanese operating firms and foreign competition bar them from extending their process know-how, they are likely to remain specialized as subcontractors and fabricators.

## Sewage Update

While some municipalities are putting their hopes on the Zimpro process to handle growing sewage disposal problems (CW, Oct. 28, p. 73), Chattanooga, Tenn., is betting on a modernized version of the conventional digester process. This month it will begin operating a \$2.2-million plant to purify 40 million gal./day of waste formerly dumped into the Tennessee River.

Heart of this plant are six digesters, each a vertical storage tank with 800,000-gal. capacity. Modern twist: vacuum filters, which recover solid humus from the reduced waste from the digesters.

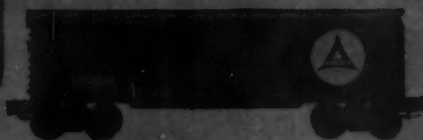
How it works: raw sewage is brought into a primary stage, where water is separated from heavy solids (which settle) and oily solids (which rise to the surface). Remaining clear water is passed over trickling filters, which aerates it and reduces the biochemical oxygen demand before the water is returned to the stream.

The solid waste from the top and bottom of the primary settlers is meanwhile combined in a raw sludge containing 4-6% solids and fed to the digesters. Here, biological action reduces the waste to humus, carbon dioxide and methane gas. The methane is recovered and used to fire the boilers. Digesters operating temperature: 95 F.





# Terephthalic Acid Dimethyl Terephthalate



## Intermediates for evaluation Available now in quantity

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## ENGINEERING

### Engineering Goes Basic

The National Science Foundation (Washington) has established an engineering section to replace its engineering sciences program office. Purpose: to emphasize engineering in basic research and to expand the variety of NSF engineering programs.

The new section is inviting for consideration proposals for research in all fields of engineering. And, in addition to the fundamental engineering sciences, it will handle research on design and systems engineering, etc. Special emphasis is being placed on engineering to meet national needs.

### PROCESSES

**New Desalting Plant:** The nation's third saline-conversion demonstration plant is going onstream this month, close to schedule (*CW Water Report*, Oct. 7, p. 49). The \$1.6-million, 1-million-gal./day multistage flash-distillation unit at Point Loma, San Diego, Calif., will purify sea water to at least 99.5% purity. The plant was constructed by Westinghouse Electric Corp.; original architect and engineering contract went to Fluor Corp.

**Gauging Leaks:** Sensitive pressure gauges are the key to a leak-detecting process now used by U.S. Naval Ordnance Laboratories (White Oak, Md.). Equipment under test is evacuated, placed in a sealed tank. Change in the tank's pressure shows leaks.

**Waste Paper Treatment:** Believed to be the largest waste paper treatment system in the pulp and paper industry, a \$1.5-million unit at Scott Paper Co.'s Mobile, Ala., plant has just been completed. Capacity: 35 million gal./day.

**ASTM Methods:** The "1961 Book of ASTM Methods for Chemical Analysis of Metals" has been published by the American Society for Testing Materials (Philadelphia). Among the topics covered: sampling methods, chemical analysis of ferrous and nonferrous metals, analysis of metal powders and spectrochemical and microchemical analysis methods. Although not assigned a part number, the book is an integral part of the "Book of ASTM Standards" and is a convenient form of ASTM chemical analysis of metals methods.

### FYI: Chemical Week Reprints

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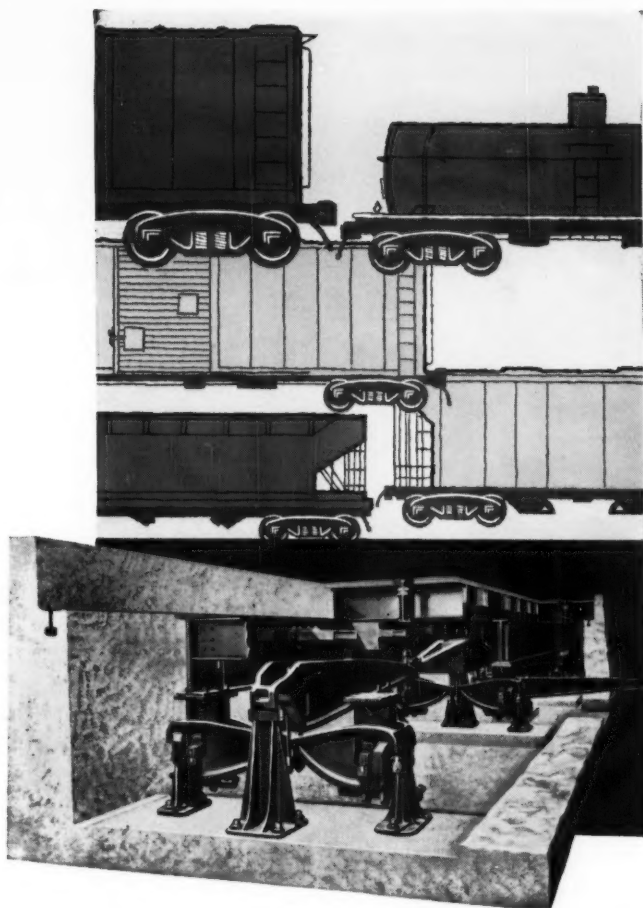
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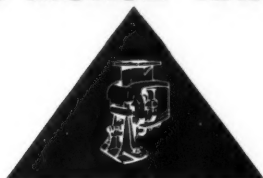
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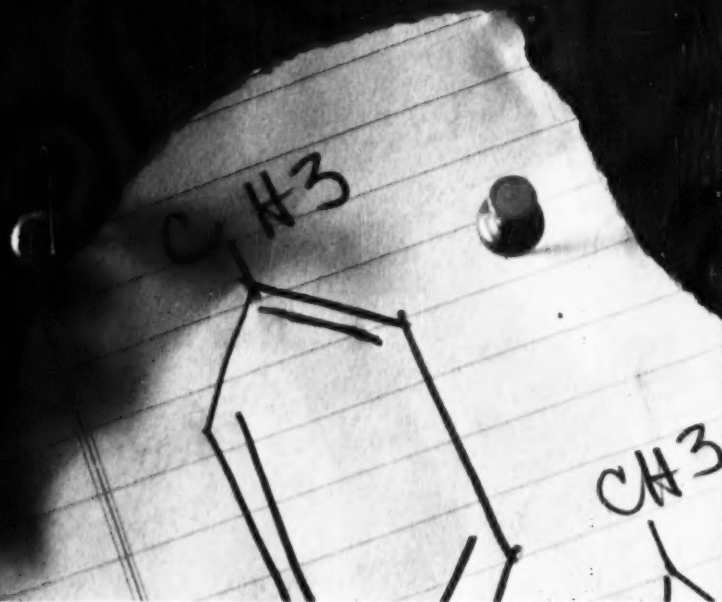
Because these scales are so conservatively rated, consistent use at their maximum capacity cannot affect their accuracy and long life. Models are available in any length or capacity to meet modern shipping requirements. Use of a Type-Registering Weighing Beam or an automatic "Floaxial Dial" with Printer" assures clear, accurate printed records of each weighing... eliminates mental calculations and provides error-free reading or transposing of figures.

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VC61-B



# Technology

## Newsletter

CHEMICAL WEEK  
November 25, 1961

### Soon there may be another producer of Teflon-type material.

Pennsalt has developed a new method of making tetrafluoroethylene (TFE), the monomer, and will start piloting it at the firm's White Marsh research and development labs outside Philadelphia. The method is described in a patent (U. S. 3,009,966) issued to the firm this week. It's a high-temperature pyrolysis of fluorocarbon ( $\text{CHF}_3$ ). Perfluoropropene is either a by-product or the only product, depending on reaction conditions. (The better-known approach to making TFL is by pyrolyzing chlorodifluoromethane.)

Pennsalt calls its polymer TFE Fluorocarbon Resin; Du Pont uses the Teflon tradename for its product. Pennsalt says it is a Du Pont licensee of "patents, not technology."

### An acrylic "paper" has been developed by American Cyanamid.

Commercialization is being undertaken jointly with Crocker, Burbank and Co. (Fitchburg, Mass.).

Synthetic fiber sheets are not new, but they have required binders, unlike Cyanamid's product, which is made on a papermaking machine. As Cyanamid sees it, this enhances compatibility with subsequent surface and impregnation treatments. Properties the company is touting: negligible moisture pickup, resistance to all common solvents, good electrical resistance, dimensional stability, resistance to ultraviolet, and compatibility with many resins.

A new thermoelectric material—an alloy of germanium and silicon—is said to provide more electricity directly from heat on a practical basis than the best of previously known materials. It was developed by Radio Corporation of America laboratories in Princeton, N. J.

There's a new team in hydrogen cracking. California Research, an affiliate of Standard Oil Co. of California (with its Isocracking), and Universal Oil Products (with Lomax) have joined forces and will license a single process, called Isomax.

Both Cal Research's and UOP's processes, along with other hydrogen-cracking methods (*CW*, April 29, p. 33), are designed to soup up cracking efficiency on high-boiling crude oil fractions. UOP says the new process resulted from independent development work by both companies.

### Two new uses for radioisotopes:

(1) The feasibility of using radioisotopes as boundary markers will be studied by surveyors of the Bureau of Land Management in Billings, Mont., and the Atomic Energy Commission in Nevada. The idea will be tried in fixing township and section corners. Advantage: boundary



# Technology

## Newsletter

(Continued)

markers that get lost or hidden create problems for engineers, whereas the radioisotopes can be easily located with a radiation counter.

(2) Goodyear researchers are working on the use of radioisotopes to date merchandise (particularly tires). A mixture of isotopes with different half-lives would be compounded into the product to be "timed." The radiation level then would be a measure of the time elapsed.

### **Progress is being made in therapy for radiation-damaged tissue.**

Injections of pancreas hormones have effected a clinical cure in a severe case of localized secondary radionecrosis. The case, reported by a Euratom doctor, involves injury to a technician in late '59. The question now is whether the cure was an isolated example. Work at Brussels Université Libre on treatment of irradiated rabbits is aimed at finding the answer.

### **A new family of low-foaming anionic surface-active agents is**

making its bow. Alcolac Chemical (Baltimore, Md.) is introducing its ABEX series, which encompasses several compounds differing in the hydrophobic material used as the base. And although the products are anionics, they are said to have some normally nonionic properties (low foaming, resistance to deactivation by metal ions and to precipitation by cationics).

The compounds are aimed primarily at applications in emulsion polymerization. They've been used in the production of vinyl acetate homopolymers and copolymers of vinyl acetate and acrylates. Such copolymers, says Alcolac, show no loss of strength or increased sensitivity to water, compared with straight acrylates. The firm reasons, the cheaper acetate can be used as a diluent for the more expensive acrylates.

Other suggested uses for the new agents: in detergents, as a scouring agent for textiles a rewetting agent for paper, in pesticide emulsions, dust laying and metal cleaning.

### **A radiation-grafted polypropylene may be the key**

to a new nonwoven felt brought out by American Felt Co. (Glennville, Conn.) and Radiation Applications, Inc. (Long Island City). The material is available in semicommercial quantities. The new felts have ion-exchange properties, are intended for use as battery separators, ion-exchange membranes, filter media and in other jobs.

They're identified only as polymer-modified polypropylene fiber, but are believed to be radiation-grafted materials. The nature of the grafting material is not known.

### **An almost-odor-free, water-thinned acrylic-latex paint**

has been developed for atom-powered submarines by the Naval Research Laboratory. Still experimental, the paint is said to compare to enamel in gloss, resistance to soil and ease of cleaning. It is reportedly superior to enamel in ease of application, freedom from odor and toxicity. It sets and dries within 20 minutes. But the new material has limitations: it does not stand up to constant temperatures higher than 160 F, nor to salt spray.





**Ameripol Rubber pins costs to the mat** In the highly competitive automotive floor mat business, Anchor Industries, Inc., Cleveland, Ohio, has solved the problem of producing a durable, attractive product at the lowest possible cost. Since switching to an Ameripol Rubber polymer, Anchor has reduced material costs over 10%. This major savings was made possible by Goodrich-Gulf's development of high oil-extended synthetic rubbers. You can take advantage of such continual improvements in synthetic rubber when you do business with Goodrich-Gulf. We produce the broadest range of rubber polymers, and offer complete technical service to help you meet exacting requirements. Contact Goodrich-Gulf Chemicals, Inc., 1717 East 9th Street, Cleveland 14, Ohio.



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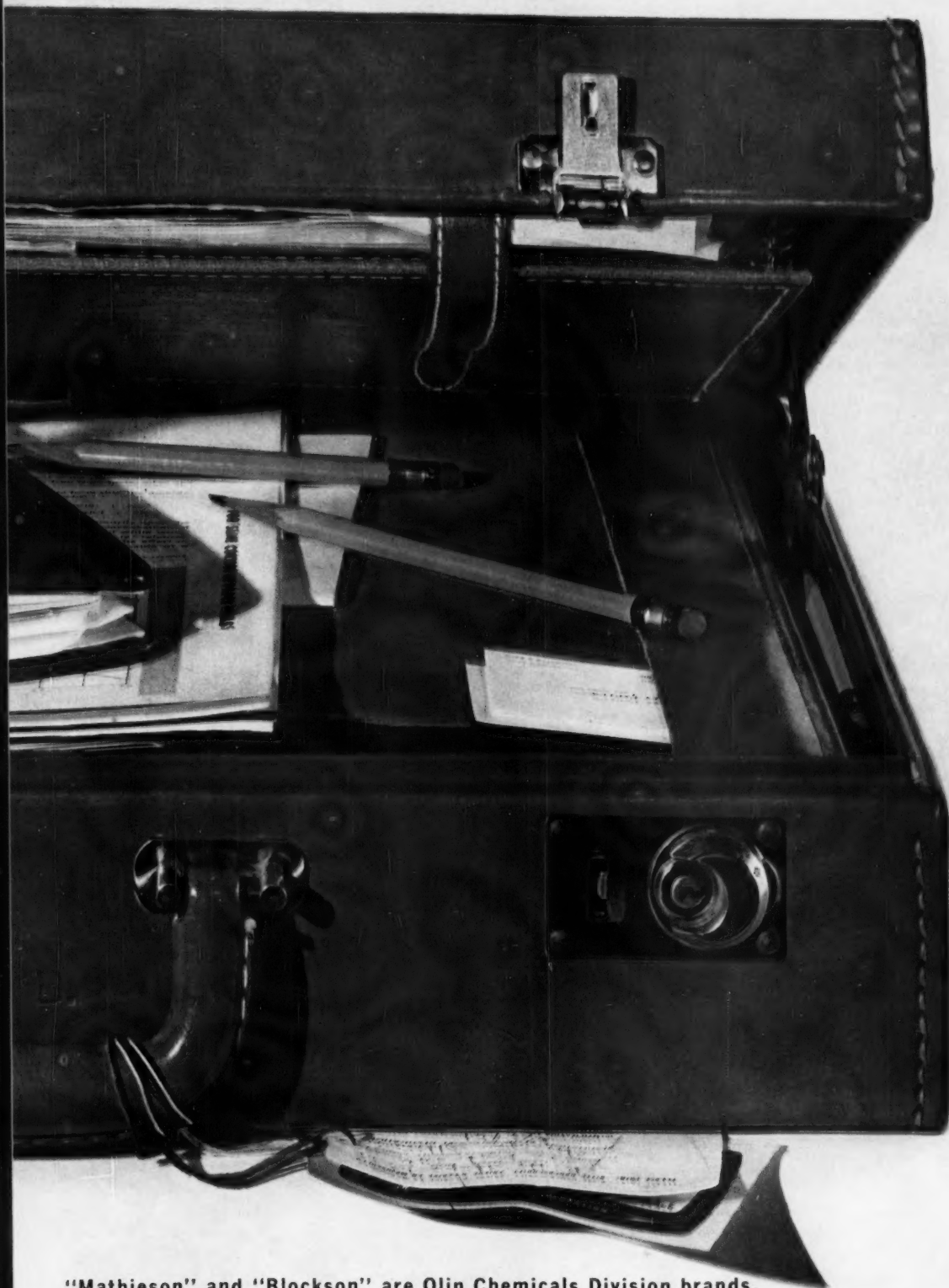
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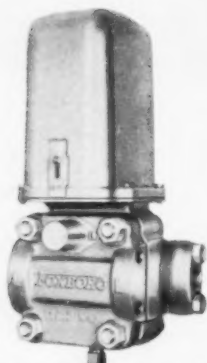
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**CHEMICALS DIVISION**  **lin**

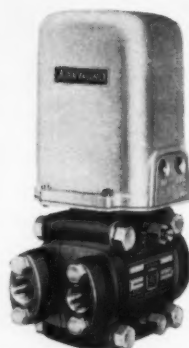




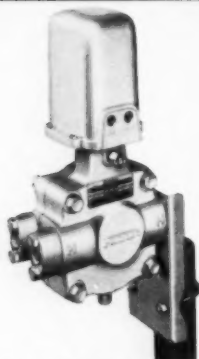
**T13AA** — for absolute pressure of dryers, columns, evaporators.



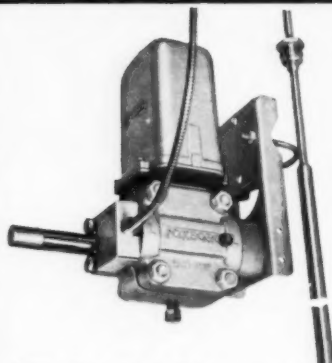
**T613** — for long distance measurement of flow, level, pressure drop. All electronic transmission.



**T13A** — for metering practically all process flows, densities, liquid level.



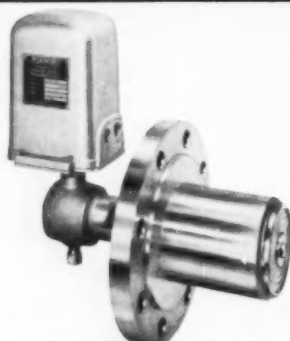
**T15A** — for small pressure drop across filters, heaters, orifices; for small liquid level heights, density measurement.



**T13V** — for vapor partial pressures, steam stripping or column control.



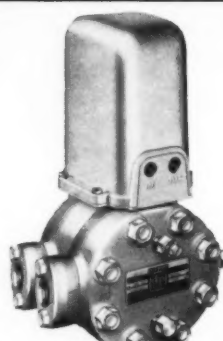
**T13A** — for metering additives, inhibitors, reactants, product gas or liquid — .003 to 10 gpm.



**T13FA** — for liquid level on tank nozzles without pocketing of process fluids: mounts flush with tank interior.



**T13FA** — for liquid level measurement: mounts direct on nozzle or tank flange.



**T13HA** — for flow, level, interfaces at pressures up to 6000 psi.

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Easy-to-use de-icers have become a necessity to many auto drivers.

## Cold-Weather Hot Seller

During the coming winter 20-25 million aerosol de-icers—up from 14 million last year—will be used by U.S. motorists to help clear windshields of ice and snow. The pushbutton de-icers have become one of the hottest new automotive specialties on the U.S. market; almost 100 brandname products are now arriving at retail outlets, and more can be expected.

Of particular pleasure to auto specialties makers is evidence that the de-icers are multiple-use items—can be used to thaw locks, cut window fogging and sometimes to improve tire traction. If, as a few optimistic producers predict, the de-icers become a motorist's necessity, sales may be in the 50-60-million-unit range within five years.

And this potential is for a very simple and low-cost product. A satisfactory de-icer has a base composed of 20-25% ethylene glycol (to prevent refreeze); 75-80% isopropanol (sometimes normal-propanol). Some water is added to improve viscosity and help

cut thin films of frost, along with some surfactant to improve the product's wetting action.

Propellant—carbon dioxide, with a slight amount of fluorohydrocarbon (other materials have also been used successfully)—is inexpensive. The popular 16-oz. container holds about 14 fluid oz. of product.

**On Top:** Far out front in de-icer sales—and widely given credit for their success—is Union Carbide Corp., which sells its Prestone Spray De-Icer through its Consumer Products Co. division.

UCC got into the market with a fluorohydrocarbon-propelled, 12-oz. product in '59. Its de-icer then had a different package and formula, was first test-sold in the Rockford, Ill., area via spot radio.

In '60 the company began pushing an improved product (16-oz., \$1.95) and was able to win an estimated 70-80% of the 14-million-unit market, according to most trade observers. Last year, however, there were only

### Aerosol windshield de-icers are heading for 20-million-unit U.S. sales this winter.

four or five major factors in the field. This year, the dozens of companies that studied Carbide's success are going to bid for a share of the market, and their distribution of these products has reshaped the conventional auto specialties selling scheme.

**100 Competitors:** Carbide's de-icer (16-oz. product, \$1.19) will be challenged not only by items produced by some formidable national marketers of automotive specialties but also by a variety of private-label products—100 variously named de-icers are already available. The field is shaping up this way:

A prime rival is Du Pont, this year retailing an 8-oz. unit (6 oz. of product) for about \$1.25. Last year the company sold a 12-oz. unit, tagging it at \$1.75, but many discounters sold it for about \$1, reflecting an apparently generous markup.

One of the leaders in the field last year, when the market was considerably less crowded, was Westley Industries, Inc. (Cleveland), which had a product called Melt. Irving Sands, president of Westley, tells *CW* that he expects this winter will be a 15-20-million-unit season (with 16-oz. units preferred) and that his own company has already shipped one and one-half times its last-season sales total, which amounted to "a couple of million cans—of the 12-oz. type."

Sands, incidentally, contends that the price structure in aerosol de-icers is unstable. He points out that suggested list prices are \$1.20-1.70 for quality products—but says "inferior" products are selling for as little as 40¢/can.

Sears, Roebuck (Chicago) has moved into the field with a product of its own, a 16-oz. unit with Sears' familiar Allstate label. This is reputed to be one of the half-dozen biggest-selling de-icers.

Among the top sellers is a product of Radiator Specialty Co. (Charlotte, N.C.). Its 12-oz. de-icer, called "See," is sold in the U.S. and (via a subsidiary) in Canada.

**Many Names:** Also a major factor



in the field, and one of the first with a product, is Consolidated Research and Manufacturing (New Haven, Conn.). Its own product, in a 16-oz. unit, is called Free O' Ice, sells for about \$1.29. It custom-fills similar de-icers for Chrysler's Mopar Division, as well as for Tidewater Oil and Standard Oil. (In Canada the product is sold through Imperial Oil, a Standard subsidiary.) Consolidated also fills for Firestone, which distributes Free O' Ice through some Texaco, Shell and Atlantic Oil dealers, as well as to its own stores.

According to some aerosolers, auto supply stores have been slow to make the most of the de-icers. For example, one of the biggest auto accessories chains, Western Auto Supply Co. (Kansas City, Mo.), is offering only two brands: A-OK, a product made by Pyroil Oil Co. (La Crosse, Wis.) and selling for 69¢/16-oz. can, and the Prestone de-icer. Western, says its automotive division buyer W. F. See, is not planning to bring out a product under its own label, even though he visualizes a possible 250-300% sales volume jump this season.

On the other hand, service stations, natural outlets for the pushbutton de-icers, are well supplied, most of them by their parent oil companies. Some sell oil-company-brand products, others carry standard-name products. Consolidated Research and Eveready Pressurized Packaged (Cleveland) have aggressively pushed their products in service stations.

**Car Company Competition:** Auto companies have slipped into the picture too. Most active, currently, is Chrysler. That company's Mopar Division introduced a de-icer last season and easily sold its entire initial supply of 12,000 cans (12-oz.) at a retail price of \$1.29. This product has a methanol base that Mopar claims is a compromise between the undesirably quick evaporation of isopropyl alcohol and the "smear" left by glycol (the biggest complaint heard about the product). This year Mopar has increased its standard can size to 16 oz., kept the price and formulation the same.

Although methanol could be destructive to acrylic lacquers (the kind used on some General Motors cars), Mopar says its de-icer cans have no warning label against this for two reasons: (1) most persons buying through

a Mopar (Chrysler) dealer would own a Chrysler-made car painted with an alkyd-melamine enamel) and (2) the methanol, when diluted by the melted ice, doesn't damage automotive finishes. (Chrysler's newly formed Cycleweld Division, which sells through automotive jobbers for the replacement market, has been testing de-icers but will not be ready for this selling season.)

At Ford, a number of formulations have been tested and the company expects to decide in two weeks whether to market (through its car dealers) a de-icer under its Fo-Mo-Co brand.

While auto makers consider the idea, another Detroit company, small but enterprising Park Chemical, has moved into the market this fall with a 16-oz. unit priced at \$1. Park markets the product through automotive jobbers who in turn sell through retail outlets. Ray Conlon, vice-president of Park, is particularly enthusiastic about de-icer prospects, particularly in the North; he predicts the average Northern motorist will soon use two or three cans/year. This consumption pace would mean that other estimates of this season's total usage (20-25 million units) are too low.

**Snow Tires and Ice Removers:** Several major tire companies are carrying aerosol de-icers in their retail outlets. B. F. Goodrich dealers and stores market Du Pont's de-icer exclusively, while Firestone sells Consolidated Research's Free O' Ice. Neither has a private-label product; Goodrich, however, tells *CW* it will sell the Du Pont product, plus a second brand, through the Car Care Centers it is establishing in department stores.

But department stores, say some observers, may not be as significant finally as grocery supermarkets. A powerful supermarket entry, and one that could upset price structures considerably, is the A&P grocery chain. It is now selling a 16-oz. product called Marvel De-Icer for 49-59¢. This product is made for A&P by Penn-Champ Oil Corp. (Butler, Pa.), which also sells a similar product under its own Penn-Champ label.

**Not for Them:** There are some surprising omissions among companies that might be expected to carry aerosol de-icers—e.g., Boyle-Midway, Dow

Chemical (which has a new Dowgard line of auto products) and S. C. Johnson. The latter firm tells *CW* it "is not involved in the business at all." A nearby wax-producing rival of Johnson, Chicago's Turtle Wax Co., already has a de-icer.

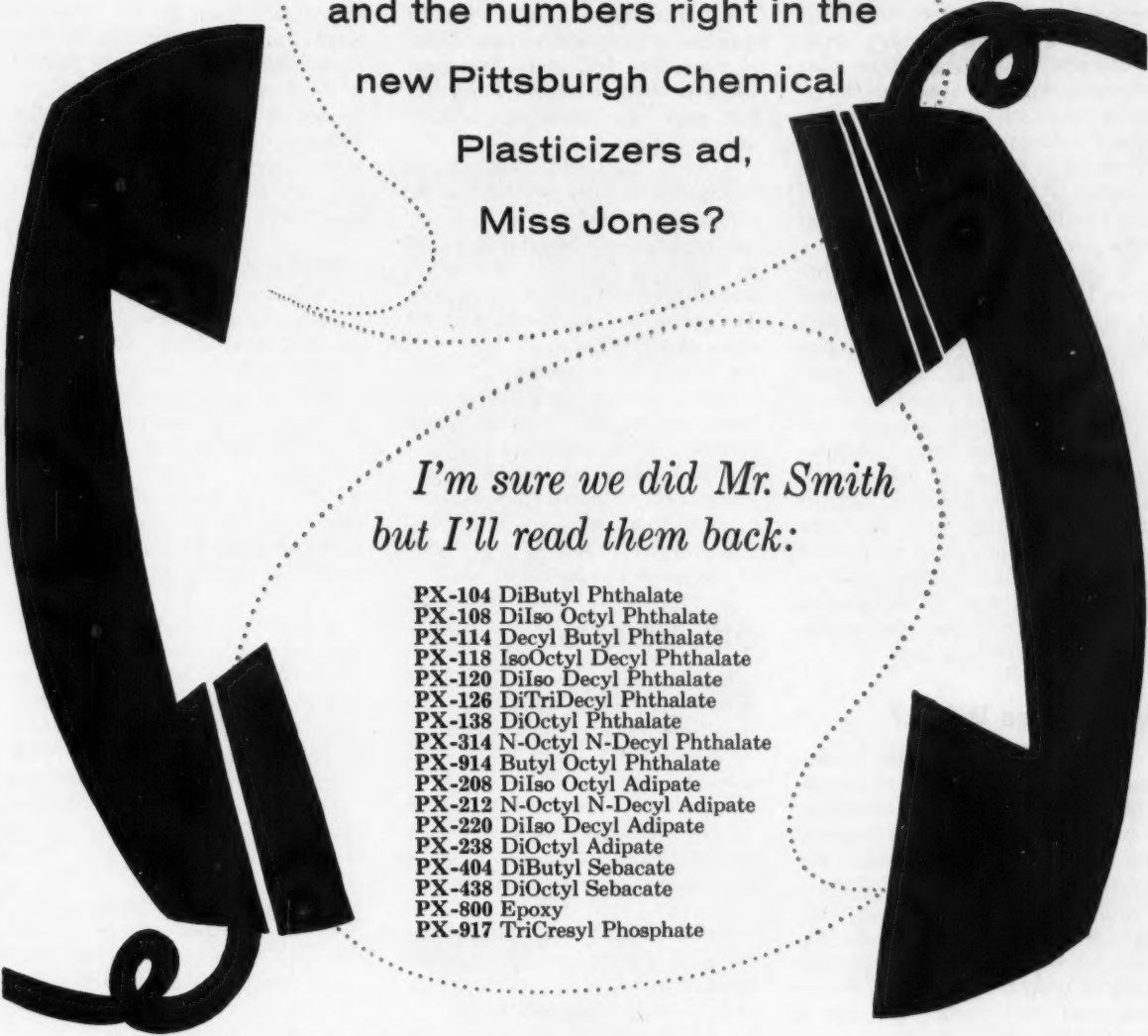
In spite of this widespread competition, and the somewhat confusing distribution picture, Union Carbide should be able to hold its top spot this year. UCC has a heavy advertising program—it's using network TV and car cards in commuter trains. This is backed up with point-of-purchase displays for service stations: a magnet attached to gas pumps, which holds a can of the de-icer. Significantly, Carbide will spend about one-third of its TV time, according to UCC's D. G. Parker, manager of Car Care Products sales, touting the product's defogging virtues—to broaden its regional appeal, give it a potentially longer selling season.

**Outside the U.S.** The sale of de-icers, despite their comparative newness, hasn't been restricted to the U.S., of course. Currently, such products are ringing up good sales in several northern European countries and in England. At the recent International Aerosol Congress, in fact, the winner of the aerosol package contest was Choice de-icer, a product made by Burazone Sales, Ltd. (London, England).

Sales of de-icers in Canada should spurt this year too. Most of the products sold there have been imported from the U.S. because no Canadian filler was big enough to afford the necessary "shaker" for carbon dioxide loading. Now, however, one of the big contract fillers has installed such equipment. British American Oil is already having its product packed there and some U.S. companies are expected to follow suit.

Most industry sources point out that this year for the first time the consumer will have a choice of a broad range of products—at attractive prices—and the products can measure up to their job. Only about 25% of the potential users, according to Union Carbide, have even heard of de-icers and a major effort will be made this year to correct that. With these factors in mind the prediction of one marketer—that "this could someday be as big as anti-freeze"—doesn't seem overoptimistic.





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PX-138 DiOctyl Phthalate  
PX-314 N-Octyl N-Decyl Phthalate  
PX-914 Butyl Octyl Phthalate  
PX-208 DiIso Octyl Adipate  
PX-212 N-Octyl N-Decyl Adipate  
PX-220 DiIso Decyl Adipate  
PX-238 DiOctyl Adipate  
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November 25, 1961 CHEMICAL WEEK 83



## Cosmetic Comers

Two companies—one already established, the other just starting out—have entered the cosmetic field.

Next month, Faberge, Inc. (New York), now a top-selling perfume manufacturer, will start a national advertising campaign to introduce its cosmetics. Among the initial items scheduled to reach the consumer: eye makeup; a pressed-powder compact; and a lipstick. Faberge expects to market a full makeup line.

Cameo Cosmetics (New York) has made its debut with its "International Woman of Color" line, designed, says the company, for Negro and other non-Caucasian women. Cameo plans to sell its quality-priced products through door-to-door salesgirls. According to Franklin Cooper, cosmetic chemist, who heads the new venture, Cameo expects to introduce different items every month—with the name Golden Lace embossed on the product cases—instead of marketing a wide assortment at one time. Present product lines include: perfumes, powders, lipsticks, and eye makeup items.

## Who Uses What?

Market researchers at the Household & Chemical Division of Owens-Illinois have just finished a broad survey of the trends in use of products for housekeeping. Here are some key findings:

- Almost one-quarter of today's housewives who do laundry at home use fabric softener, approximately 14% of them have used it less than a year and 90% report that they're satisfied with the product.
- Of the same group, 29.2% say they use fabric softener with their entire washing, while 47.2% use it only with towels, mats, and wash cloths.
- Some 44% of the housewives surveyed report they use rug cleaners. Of these, 60% say they prefer the liquid to the dry type.
- Ammonia, an old stand-by, is making big gains. In '46 some 23% were using ammonia in household tasks; now 64% are using it. Of the users, 55% use liquid ammonia with suds and 44% use it without suds. The quart-size bottle is preferred by 67%; pints by 26%, and the rest buy other types of containers.

- More than 8 of 10 housewives surveyed use commercially prepared window cleaner and of these 60% apply it with a finger sprayer.

- Liquid starch is used by more than half of the consultants and slightly more than half prefer the quart size over other containers. More than half prefer the starch with a scent added.

- More than 90% voted liquid bleach over the dry type as best for laundering. Use of liquid bleach for routine household cleaning appeared to be gaining; more than 88% of the housewives use it for that purpose. The gallon and half-gallon sizes are about equally popular.

- Almost three-quarters (73.3%) of the housewives queried do all their laundering at home and 14% send part to a commercial laundry.

- Bluing is on the decline. In '46, almost 77% of homemakers used this product. Today only 39% use it. Detergent-with-bluing is used by 41% of this group and dry bluing by 36%.

## OK's Inhibitor

**Rust-inhibiting chemicals** — to be mixed with all salt dumped on city streets this winter—received approval by more than a two-to-one margin, from voters in Akron, O. Outcome of the controversial issue, whether or not the city would use an inhibitor to reduce automotive rust, was in doubt right up to election day (*CW*, Oct. 28, p. 45).

But at the same time and by nearly the same margin, the voters turned down a tax levy that would have brought in \$80,000/year to pay for the inhibitor. Result: the money will have to come out of an already overburdened street maintenance fund.

Although there is no fixed price of chemical inhibitors, one current quote is \$0.14/lb., and the compound is used at a 20-lbs./ton rate. Currently, Akron requires about 10,000 tons of salt each winter. There would probably be additional outlays to pay for mixing the inhibitor and salt.

However, opponents say a tax levy would collect more money than needed, would hit property-owners rather than motorists. Also, salt prices — now about \$2 ton — dropped this year, and this saving could offset part of the extra expenses.

## EXPANSION

**Sold American:** Aerosol Techniques Inc. (Bridgeport, Conn.) has been admitted to trading on the American Stock Exchange. According to ATI, it's the first company wholly devoted to the manufacture and packaging of aerosols to be so listed on a major exchange. The firm was founded by H. R. Shepherd in '55, became publicly owned last February and has until now been traded over-the-counter.

**Plastics:** Hungerford Plastics Corp. (Morristown, N.J.), formulator and compounder of vinyl plastics, has purchased Ductall Corp. and Newport Plastics (both of Costa Mesa, Calif.). These firms manufacture flexible, reinforced vinyl hose for such uses as chemical fume exhaust and automotive defroster systems. Ductall will continue operations at its West Coast plant, with added production lines set for the Hungerford plants in Morristown, N.J., and Durant, Miss.

**Drugs:** A. J. Parker Co., Philadelphia drug firm, has acquired Drug Specialties, Inc. (Clemmons, N.C.), as part of its plan to move the Parker manufacturing, sales and distribution operations to South Carolina. Drug Specialties will be merged with the just-acquired Hart Drug Co. (Miami, Fla.) to form the new Parker Division, Hart Laboratories, Inc.

**Chemical Plating:** Enthone, Inc. (New Haven, Conn.), a subsidiary of American Smelting and Refining Co., has installed a new production facility for large-scale manufacture of its Enplate chemical plating process.

**Paint:** Hughes Paint Co. (Los Angeles) has just completed arrangements for a \$175,000, 13-year loan from Prudential Insurance Co., will use it to finance retail-store expansion.

**Industrial Coatings:** Caldwell Chemical Coating Corp. (Cleveland) plans a 7,000-sq.-ft. unit at Fayetteville, Tenn. The plant is scheduled to go onstream in Jan. '62. In addition to producing industrial coatings, Caldwell expects to offer a consulting service to other manufacturers.

**Cosmetics:** SPA Laboratories (Wilmington, Del.) has filed incorporation

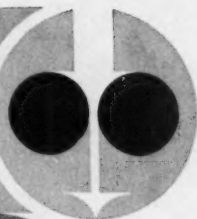


# can these properties solve your process problems?



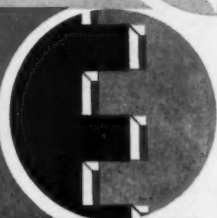
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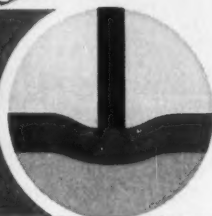
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**METALLIC STEARATES**• Choose mold release agents and internal lubricants from the broadest line of stearates available in the U.S. Witco stearates promote smooth processing, facilitate extrusions, increase flow rate into molds and gel PVC plastisols.



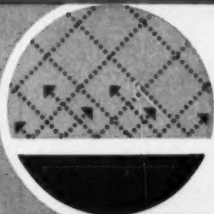
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**ESTER TYPE PLASTICIZERS**• Esters of fatty acids and dibasic acids for use as plasticizers and mold release agents; impart flexibility and surface lubricity to finished products; and facilitate easy processing.



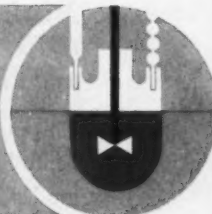
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**STAYRITE® VINYL STABILIZERS**• Heat and light resistant properties of Stayrites® counteract degradation effects in clear and opaque PVC formulations. A broad selection of stabilizers and synergists are available.



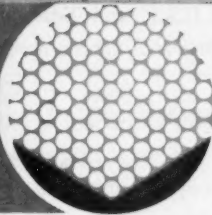
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**PHTHALIC ANHYDRIDE**• Used in manufacturing plasticizers, unsaturated polyesters and alkyd molding compounds, phthalic contributes toughness and durability to finished products. As a curing agent for epoxy resins it also increases pot life.



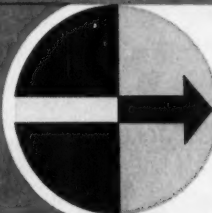
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## SPECIALTIES

papers with the Secretary of State's office in Dover, Del. The firm plans to go into cosmetics, lists \$500,000 authorized capitalization.

**Aerosol Paint Plant:** Plasti-Kote has just opened an aerosol paint plant in Medina, O. The new facility cost over \$1 million, has a top capacity of 50 million cans/year of spray paint. Plasti-Kote estimates that the plant's annual sales could eventually top \$20 million.

## PRODUCTS

**Plastic Decorator:** Rubba, Inc. (1015 E. 173 St., New York 60) has developed a series of fade-resistant lacquers for decorating treated or untreated polyethylene and polypropylene. Called Rubbalac, the permanently flexible coatings are claimed to have excellent adhesion to polyethylene, won't peel, crack or fade.

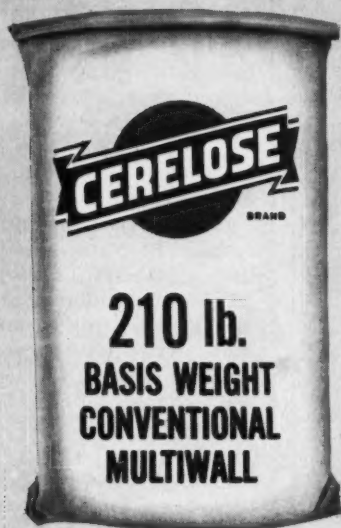
**Germ-Killing Concentrate:** Rohm & Haas (Philadelphia) has started commercial production of a new anhydrous liquid germicide, Hyamine 3500-80% Concentrate. The germicide blends alkyl dimethyl benzyl ammonium chlorides and ethanol, making it effective as a sanitizer and deodorant. Possible applications: germicidal mop dressings, floor oils, swimming pool slimicides.

**Anti-Algae:** Ionac Chemical Co. (Birmingham, N.J.), a division of Pfaunder Permutit, has added a new cooling water biocide to its product line. The formulation (tradenamed Ionac Biocide 1825) is water-soluble, designed primarily to prevent micro-biological growth—e.g., algae—in heat transfer equipment.

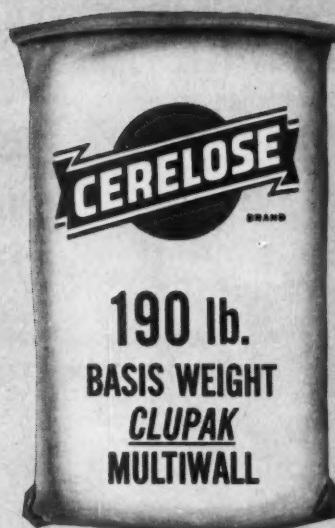
**Epoxy Line:** Resin Systems, division of Fenwal, Inc. (Pleasant St., Ashland, Mass.), is marketing a new line of epoxy formulations and packaged systems. Main uses: bonding, potting, encapsulating or sealing electronic and electrical components or modules.

**Built-in Pad:** Bankers & Merchants, Inc. (4410 N. Ravenswood Ave., Chicago 40), is now selling "permanently inked" porous rubber stamps. The rubber, developed by National Cash Register Co., contains its own ink





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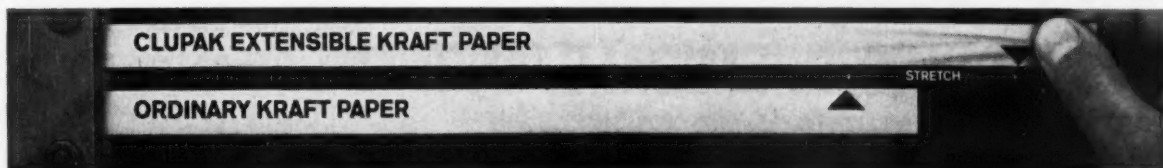


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## SPECIALTIES

supply, eliminates the use of stamp pads. According to NCR, up to 20,000 impressions can be made before the stamp needs re-inking.

**Shielding Tape:** Permacel (New Brunswick, N.J.) has developed an electrostatic shielding tape — called Permacel EE 6105—for use as a non-shorting, electrostatic shielding wrap on toroidal transformer and bobbin-wound coils. Specific applications: semi-insulated grounding strap; shielding outer wrap on capacitors; pressure-sensitive, conformal flat conductor.

**Fortified Dentrifrice:** Lever Bros. (New York) is test marketing a stannous fluoride version of Stripe toothpaste in the Boston area and a tyrothricin-formula Stripe in Richmond, Va., and Wichita, Kan. Lever has also added ammonia to Handy Andy, its all-purpose, liquid detergent, and is sending it into national distribution after tests in Virginia and Illinois. Handy Andy will be sold in 15-oz. (39¢) and 28-oz. (69¢) bottles.

**Flattening Agent:** Johns-Manville Corp. (New York) has developed a diatomite flattening agent for paints —called Super Fine Super Gloss— that requires no milling or grinding. The white diatomaceous silica has these physical characteristics: loose weight, 7.5 lbs./cu.ft.; oil absorption, 130 lbs./100 gal.; free moisture, 1%; bulking values, 19.2 lbs. gal. (0.052 gal./lb.).

**Emulsifiers:** Two emulsifiers that help form highly concentrated insecticidal solutions are being marketed by Nopco Chemical's Industrial Division (Newark, N.J.) under the tradenames Agrimul OQZ and Agrimul ORH. Both were developed for use with thiophosphate toxicants in 6- and 8-lbs. formulations (extremely low solvent concentration).

**Sound Softener:** Monroe Sander Paint Corp. (10-18 46th Ave., Long Island City 1, New York) has added a paint to its product line that is said to deaden sound. The paint, called Silent Guard, is claimed to be 50% more effective for sound-deadening purposes than are standard wall paints. No surface preparation or primer coats are required.



# SULPHUR

View of our new large main storage and shipping terminal at Beaumont, Texas. Solid sulphur vats (top center)—part of our large inventory—with molten sulphur storage tanks to their right. Freighter (center) taking on solid sulphur; tank barges (right) loading molten sulphur. Empty freighter (lower center) at holding dock.



# 2,500,000 tons-PLUS

## *...a healthy reassuring TGS inventory!*

At the close of 1960 stocks of Frasch-mined Sulphur in the United States...and it is this Sulphur that accounts for most of the world's inventory...totaled about 3,650,000 long tons.

What is the TGS contribution to this inventory? Better than two thirds. Combining inventories at its four Frasch producing properties in Texas with stocks at its main and regional terminals, TGS has a running inventory of about 2,500,000 tons or about 70% of U. S. total inventory. In addition, there is a considerable inventory at its gas recovery plant in Okotoks, Alberta.

2,500,000 long tons plus of TGS Sulphur...indeed, a healthy reassuring inventory!



### **TEXAS GULF SULPHUR COMPANY**

75 East 45th Street, New York 17, N. Y.

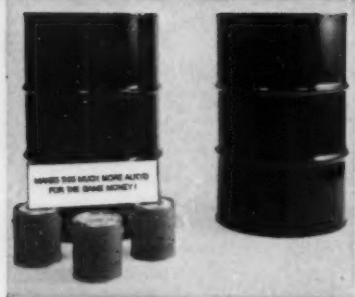
811 Rusk Avenue, Houston 2, Texas

Sulphur Producing Units: Newgulf, Texas • Moss Bluff, Texas

Fannett, Texas • Spindletop, Texas

Worland, Wyoming • Okotoks, Alberta, Canada





### BENZOIC ACID, TECHNICAL... new way to make better alkyd resins—at lower cost

Benzoic acid now has new potential as a modifier of alkyd resins, since the price has been reduced to 20 cents a pound. With pentaerythritol and other higher polyalcohols it produces coatings with better gloss and durability than similar films made with up to 40% excess glycerin. Try holding excess alcohol to 5% in alkyd formulations by replacing up to 10% of the phthalic anhydride with benzoic acid.

Benzoic acid can partially replace higher-cost pelargonic and lauric (from coconut oil) acids in 40% and less oil length alkyds—with noticeable improvement in the gloss and durability of the enamel. At its new low price, 66 pounds of benzoic acid can replace 100 pounds of *para*-tertiary-butyl benzoic acid to give equal film performance.

For trade-sales paints consider benzoic acid for water-soluble alkyds; emulsion alkyds; and alkyds for blending with polyvinyl acetate, styrene-butadiene, and acrylics.

No profit-conscious alkyd resin manufacturer can ignore the potential savings and improved coatings made possible by benzoic acid.



### SANTICIZER® 160... "flexi- bilizes" acrylic coatings and safeguards gloss

Acrylic resins put high-gloss "sales appeal" in coatings—though sometimes the gloss fades and the flexibility just isn't good enough. The resins stubbornly refuse to respond to most plasticizers. But there's *one* plasticizer acrylics really "go" for: Santicizer 160. It's highly compatible up to at least 35% with acrylic resins—and a coating with 28 PHR actually retains a *better* gloss after 12 months of Florida exposure than an unplasticized formulation! Acrylic coatings formulated with Santicizer 160 have outstanding resistance to water spotting, too, plus improved flow and leveling. Their sheen and durability have been proved over the years. Want to make a flexible, high-quality, fast-drying acrylic finish? Monsanto can guide you in formulating with Santicizer 160—the most *compatible* plasticizer for acrylic resins.



### SANTOBRITE®... the penny- and-a-half per gallon insurance against mold and fungi

Shelf life and storage in warm environments make protection against microorganism attack imperative if a manufacturer wants to insure the quality of his brand. Organic materials in paint pigments—whether formulated for water-base or solvent-base—are variously susceptible to mold and fungi. The result can be "spoilage" in the form of bad color, unsightly growth, and foul odor on opening the container.

Penta (oil-soluble pentachlorophenol) and Santobrite (its water-soluble sodium salt) kill these quality-destroying microorganisms in low concentrations. Cost? *As little as 1½ cents per gallon!* Water-soluble Santobrite is ideal for preserving water-base casein, rubber latex, and other resin emulsion paints. It can be used in oil-base products, too, simply by grinding with the pigment. Or Penta can be used—dissolved directly in one of the oils or solvents. Penta can also be easily converted to the potassium salt for addition to latex paints where the sodium ion might cause "bloom." In higher concentrations than the tiny amounts needed for shelf-life protection, Penta and Santobrite make paint *permanently* mildew-resistant. Try them and see.

## Monsanto task force chemicals

### MISSION:

# CHEMICAL PATHS TO NEW COATINGS

Paint chemistry breaks the "profit squeeze"! New ways have been found to make new film formers—different, tougher, more economical than anything before. They *have* to be. Today's needs demand paints, lacquers, and special coatings with superior chemical and weather resistance; stronger adhesion to a wider variety



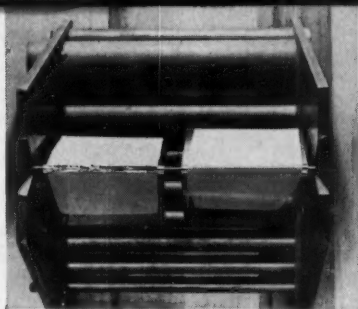


## AROCOR®... improves chlorinated rubber and epoxy coatings, cuts cost

In swimming-pool paints, industrial coatings, and marine and traffic-marking paints—the Aroclor liquids and resins (12 to select from) impart a variety of performance improvements. In chlorinated-rubber paints, the presence of an Aroclor resin increases resistance to water, acid, alkali—improves adhesion and film strength—imparts greater weather resistance. Makes the coatings flame-retardant, too!

Aroclor plasticizers are compatible with epoxy resins. The liquid Aroclor compounds give epoxies a high degree of flexibility—the resinous compounds act as reinforcing resin extenders. The addition of an Aroclor greatly retards the burning rate of epoxy compositions, and, when formulated with a small amount of antimony oxide, produces non-burning formulations!

A major value of Aroclor compounds is their complete *inertness*. Alkyds, polyesters, rosin esters—in contact with cement—all saponify, thus losing some chemical resistance; chlorinated paraffin under weathering conditions loses chlorine and becomes subject to attack. But the Aroclor compounds for all practical purposes are *immune* to chemical change. Aroclor additions to coatings invariably improve their performance—and frequently reduce their cost per gallon, as well.



## DIBUTYL MALEATE, DIBUTYL FUMARATE... permanently pre-plasticize polyvinyl acetate coatings

DBM and DBF, highly reactive monomers, readily copolymerize with vinyl acetate—give desired flexibility that is *permanent*. The internally-plasticized polyvinyl acetate coating is not subject to extraction or volatilization; and such coatings show a marked improvement in general properties over the *best* post-plasticized formulation. A polyvinyl acetate latex paint formulated with 20% DBM or DBF has sufficient flexibility for good low-temperature performance.

In addition, the pigment-binding power, weather resistance, and abrasion resistance are greatly improved. The coatings dry fast and—since the film is *internally* plasticized—problems of migration are virtually eliminated. The DBM and DBF esters are the most efficient comonomers on a price/performance basis. Data show savings of 1¢/lb. on resin solids when compared to other monomers for this use.

DBM and DBF also copolymerize with vinyl chloride, acrylics, styrene-butadiene, and other resins and monomers. Blends of these modified systems with alkyds can be expected to produce low-cost, high-performance, alkyd-extended resin systems.



WITHOUT



WITH

## MODAFLOW®... new additive improves leveling, flow-on, eliminates "pinholing"

Modaflow is one of those special materials that work wonders even with small "doses." It's so new in the coatings field that its span of uses is just beginning to define itself. Basically, Modaflow acts on the surface tension of organic liquids. Added in the range of only 0.10 to 2.0%, Modaflow promotes leveling and spreading. It completely eliminates bubbles and foam entrapment in many acid and neutral organic coatings systems.

Modaflow has such a unique action that it should improve the film uniformity and the application characteristics of any flow-on, dip, or roller-coat formulation—whether the base resin is alkyd, melamine, phenolic, polyester, or epoxy. Modaflow appears to be water and pH sensitive. However, it will tolerate up to 2% water in the system, and the concentration needed will vary with the resin and with degree of acidity. In evaluating Modaflow in any specific coating formulation, a wide range of concentration must be tried "stepwise," since the modification usually takes place in a certain critical concentration range, which in some coatings is quite low; in others, much higher. In any case, just a little Modaflow does a lot.

of substrates; increased flexibility; even better resistance to mildew and biological attack.

Monsanto offers a whole task force of compounds that can help you make surface coatings perform *better*, process *easier*, cost *less* to manufacture. Check the six profit-stretchers above. Use them to "build" new products of your own.

For more details, use this handy coupon

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- ☐ Benzoic Acid    ☐ Aroclor  
☐ Santicizer 160    ☐ DBM and DBF  
☐ Santobrite    ☐ Modaflow





# Cutting Cooling Tower Costs with

Early next spring two novel cooling towers will be built at Trombay, India, for Fertilizer Corp. of India. Of prestressed concrete construction, they will be the first towers of a new design developed by Slough-DeFlon (San Dimas, Calif.) and it's S-D's contention that they can be built at a cost that is competitive with redwood towers in this country and maintained for 20-25% of the yearly repair costs of wood towers.

By eliminating wood in the structural framework, the new S-D tower will present a shell that is fireproof and said to resist fungus attack and weather deterioration. Jack M. Slough and James G. DeFlon, tower designers, estimate that it will last about twice as long as a wood tower that has a maximum life span of 20-25 years. In some sections of the country structural wood framework has to be replaced in about 10 years, and plant engineers generally agree that average framework life span is 15 years. Additional life can be obtained by pressure treatment or impregnation of the wood with creosote, copper chromate and similar chemicals. But this can increase lumber cost about 20%.

S-D, which also makes conventional wood towers, will use large concrete members for columns, beams and walls in the new concrete towers. This simplifies the design, eliminates braces, fill or packing supports, ties and many of the intermediate supports needed in wood towers and European-design concrete towers. Two large concrete beams (12-in. x 24-in. cross-section) serve as structural support for a novel type of fill rack that is a key to design and maintenance economy.

**Rack Rest:** The racks are made of 1/2-in. galvanized steel wire, coated with polyvinyl chloride for corrosion resistance (silicon-bronze might also be used). Essentially they form a grid arrangement 4-ft. wide and 35-ft. long with 4x2-in. openings. The racks are suspended from hooks imbedded in the beams at the top of the tower and are anchored at the tower base with no intermediate support. Spaced at 3-ft. intervals, they support the fill or packing material, which is slid into the rack openings in 6 3/4-ft. lengths.

The rack makes the S-D design more flexible than wood and other concrete towers. A tower can be built for future expansion by inserting fill bars into every second or third rack space for present needs, sliding fill into the empty spaces as increased cooling capacity is required.

Although S-D uses redwood fill, as do conventional wood cooling towers, the slide-in design simplifies replacement of the fill. Untreated redwood fill bars might have to be replaced every 10-15 years. But most plant engineers are less concerned about packing materials, which are constantly water soaked and don't seem to require continual repair, than they are with the spray-wetted structural framework and tower shell.

Over-all maintenance problems can't be pinned down as yet because the first S-D concrete tower hasn't been built. The only problem mentioned at this stage is possible leeching of lime from the cement—a problem that apparently hasn't been a severe handicap in Europe where concrete towers are used extensively. S-D's estimate of annual maintenance cost is 1-2% of initial tower cost compared with 5-8% for a conventional wood tower. And, because the new tower uses the same standard equipment and hardware (fans, gears, etc.) as wood towers, there is sound basis for predicting performance.

**Wood vs. Concrete:** There have been some small concrete towers built in this country—essentially cement shells built around wood frames. However, wood has been the standard construction material because of its availability and reasonable cost. In Europe, the situation has been reversed for many years.

A European-design tower, built in this country, would cost two or three times as much as a wood tower, according to Slough and DeFlon. A large tower of European type (resembling a hyperbola for creation of natural draft) is being built by The Marley Co. (Kansas City, Mo.) for Kentucky Power & Light. One justification: longer write-off time used by utilities than chemical process industry firms.

In Europe, concrete towers can in

part be justified by lower labor costs. For example, the cost of concrete in the U. S. would be about \$100/yd. including forms, setups, labor, according to Slough and DeFlon. Of this about \$20 goes for material, \$80 for labor.

In a typical 10,000-gal./minute tower cell, S-D plans to use only about 200 tons of concrete while a European-design tower of the same capacity would use 400-600 tons. This would cut the bearing load on foundations, and although an S-D concrete tower is heavier than a wood tower, DeFlon says that foundation footings for his firm's concrete tower would require about the same amount of concrete as the footings for a wood tower and would also need about the same 6-ft. basin depth.

In foreign countries, S-D feels it can put up towers for about 50% of the cost of a European-design concrete tower.

In the U. S., where a redwood cooling tower costs about \$25,000 for each 10,000-gal./minute cell, S-D feels it can also be competitive. It can erect a concrete tower on the East Coast for roughly the same price as a redwood tower, says Slough. On the West Coast, where freight costs for redwood are lower, S-D's tower would cost about 10% more than a wood tower. But Slough predicts that within 18 months the cost of a concrete tower will be less than that of redwood because tooling will be completed. Standard metal forms will enable S-D to precast beams instead of pouring them in place at the job site.

**For the Future:** In addition to the two towers that will be built in India with a combined capacity of 60,000 gal./minute, S-D has bid on another tower with a 300,000-gal./minute capacity. It has also bid on two towers for power plants and two for chemical plants—all in foreign countries. In this country it has bid unsuccessfully on two towers for power plants, but DeFlon hopes to snare its first U. S. job within the next six months.

Slough predicts that within the next five years all cooling towers built in the U. S. will be of concrete. "Everybody in this country has been think-



# Concrete

ing in terms of wood all their lives. The switch will involve a major change in thinking, but I believe it's inevitable," he says.

Plant engineers have at least been thinking in terms of increasing the service life of cooling towers for many years. Most of the work has been in chemical treatment of wood and choice of treatment remains a controversial point at many plants (*CW*, Nov. 3, '56, p. 126). Last month, Du Pont suggested the use of neoprene as a coating for wood towers to cut deterioration, improve appearance and protect against fire, which is a hazard when towers are shut down.

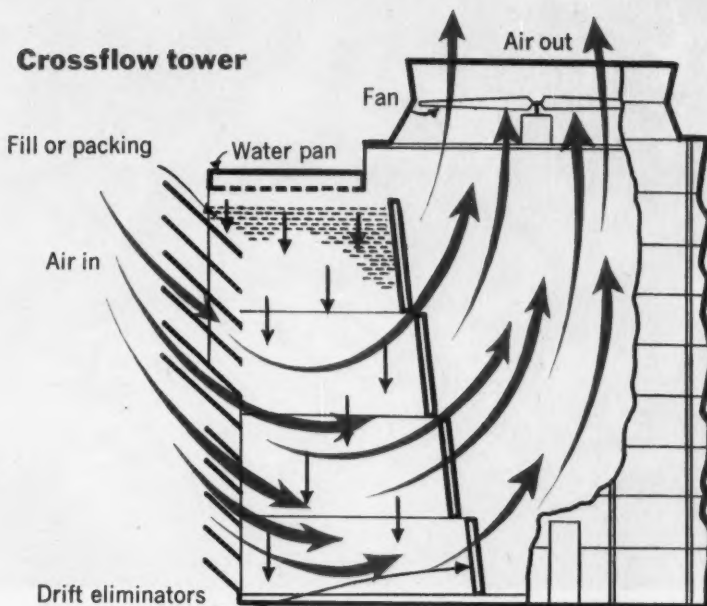
Conventional fire-protection sprinklers placed at the top of a tower may add 10-15% to the cost of a tower—a result has been that less than 5% of the towers now in operation are so equipped. S-D's new concrete design provides a fireproof shell and the firm is experimenting with materials other than wood to come up with a completely fireproof design. Colorfill, a cement-asbestos fill bar developed jointly with Johns-Manville, has better physical properties than the ordinary cement-asbestos combinations often used in Europe. However, redwood's cost (20¢ for a 6-ft. length of wood fill) is difficult to match for any material, including polyethylene at about 5¢/ft.

Moreover, the racks used in S-D's design will not support the weight of the heavier cement-asbestos material. Another drawback of the rack is that it can only be used for the crossflow type of cooling tower (see *Dimension*). In the counterflow type of tower, the system of headers and laterals at the top of the tower won't permit suspension of the racks. This would make the new S-D tower most attractive for power plants where cooling requirements are not as severe (i.e., a narrow cooling range where the cold-water temperature does not approach air wet-bulb temperature).

However, there are many chemical plant applications in which crossflow cooling towers are used and the new Slough-DeFlon concrete tower may offer the opportunity to extend service life without increasing tower cost.

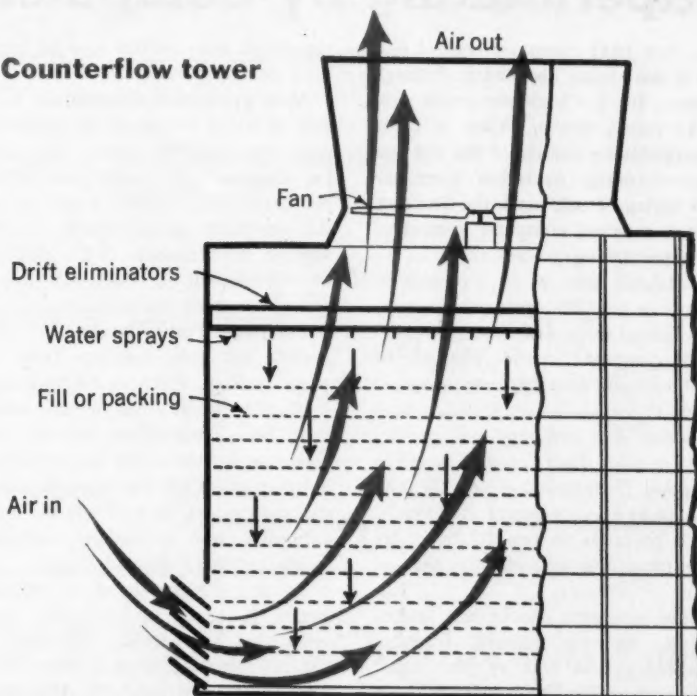
## DIMENSION—Cooling Tower Comparisons

### Crossflow tower



Air is drawn into the cooling tower through large in-take louvers that run the full height of the tower. The air flows across the stream of water falling through the packing and exits through an open center section.

### Counterflow tower



Air is drawn into the tower through louvers in the lower portion of the tower, flows upward through the stream of water falling through fully-packed tower. Such counter current flow provides greatest cooling.





Potlatch's Keller (left), Ulm plan for paper machine control.

## Papermaking by Computer

A new IBM computer control system is now being installed at Potlatch Forests, Inc.'s Clearwater paper mill at Lewiston, Idaho. When it takes over open-loop control of the wet-end (paper-forming) operation sometime next spring, it will mark the first step toward eventual computer control of the papermaking process.

Potlatch's aim is to cut process downtime by 75%, thus provide possible annual savings of about \$600,000 (with computer rental charges of \$42,000/year covered) according to Vance V. Vallandigham, Potlatch vice-president. The company will use an IBM system, built around a 1620 computer. Designated 1710, the system checks all variables of the process, which proceeds so rapidly that there is not time for a fully effective manual check.

Now, operator checks are limited to pH, moisture content, freeness, consistency and tear of the paper being formed. Less than twice an hour a "turnup" (a laboratory sample) is taken, but complete test results aren't available for about 35 minutes—dur-

ing which time several tons of paper have been produced.

Most production downtime is a result of sheet breakage or failure to meet specifications—most often during changeover from one grade of paper to another. Only a small part of the downtime is attributable to preventive maintenance (e.g., changing the wire screen on which wet pulp is picked up from the headbox).

**Forty-one Point Check:** The 1710 system will take readings from 41 points—all of which could have been measured before, but which would have been meaningless because they represent variables that are unknowns in their effect on the over-all papermaking process. In addition, the 1620 computer will derive five variables from the data collected.

By first logging the data, Potlatch hopes to come up with the variables that are actually important to the papermaking process, then determine how to control them. At present, application of the computer control techniques extends only to the start of the drying section, but Donald

Keller, production manager and Kenneth Ulm (*photo, left*) are discussing the possible enlargement of the system to include other sections.

Theoretically, savings could go as high as \$2.1 million annually, according to Potlatch engineers. For example, an average of 6.5 changes in paper grade per machine were made each day in '60. From 10 minutes to one hour of running time was required each time to achieve product specifications—at a minimum cost of \$2,000/hour. Potlatch is aiming for downtime of five minutes or less for a grade change.

## EQUIPMENT

**Water Brake:** A small water brake for absorbing the shaft horsepower of engines, turbines and other rotating machinery to measure power output is a new product of Kahn & Co. (P. O. Box 516, Hartford 1, Conn.). The water brakes are supplied as a complete package that can be attached directly to the rotating machinery and a water supply. Models are available for absorption of up to 8,000 hp. at speeds up to 24,000 rpm.

**Particle Camera:** Royco Instruments Inc.'s (440 Olive St., Palo Alto, Calif.) new Model 500 camera is a fast-operating, portable instrument for recording particulate distribution and concentration in large-scale field surveys of air pollution. The camera produces a photographic record 10 seconds after a sample of air has been drawn into the camera's examination chamber. Photographic prints for size analysis by standard grid and slide transparencies can be made from the Polaroid Type 47 material used by the camera.

**Micron Filter:** Sela Flotronics Division of Sela Corp. of America (Spring House, Pa.) is out with a new line of microporous industrial filters said to have sealing effective enough to trap and retain particles as small as 0.3 microns. The filters are affixed in-line with filtering element attached to a separate mounting head that can be removed without breaking connections. Filter elements are available in seven microporous porcelain grades, seven microporous stainless-steel grades, eight microfine stainless-steel screens and four bonded glass fiber



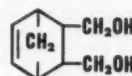
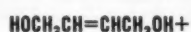


## increased demand for this unique intermediate permits a further reduction in price

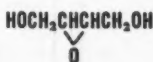
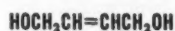
BUTENEDIOL is a unique and versatile olefinic glycol. The *cis*-configuration and highly reactive double bond make it a key intermediate in the manufacture of many products, such as agricultural chemicals, polymers (including polyurethanes and epoxies), pharmaceuticals...

### TYPICAL REACTIONS

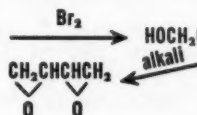
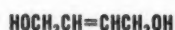
#### 1. Diels-Alder



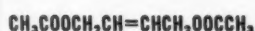
#### 2. Epoxidation



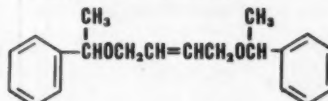
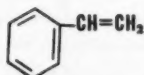
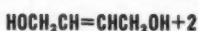
#### 3. Butadiene Dioxide



#### 4. Ester formation



#### 5. Ether formation



Other interesting and useful intermediates  
available in laboratory quantities:

1,2,4-butanetriol  
butynediol diacetate

2,3-dibromo-2-butene-1,4-diol  
1,4-dichloro-2-butyne

For new data bulletin on BUTENEDIOL and/or for further information, price schedules and samples of any of these versatile intermediates, write to: Dept. A-11



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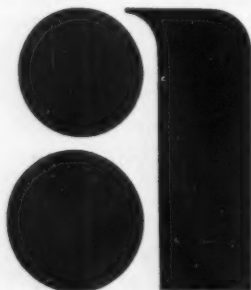
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service



TAILORED to fit your particular requirements... that's Ansul's CUSTOM METHYLATION SERVICE. Ansul Methyl Chloride has been used as a methylating agent under many conditions where methanol cannot be used. For example: in the production of silicone products, methyl ethers, methyl esters and methyl amines (quarternary ammonium compounds). We can methylate in our plant to your requirements... or aid you in setting up your own processing facilities. Write for samples, technical literature or problem-solving consultation. Our 25 years of methylating experience are at your disposal. **ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN**

#### PROPERTY DATA

CHEMICAL FORMULA...  $\text{CH}_3\text{Cl}$   
MOLECULAR WEIGHT... 50.491  
SPECIFIC GRAVITY  
Liquid—23.7°C/4°... 1.00  
20°C/4°... .92  
Gas 0°C, 1 atmos... 1.74  
BOILING POINT °C, 760 mm... —23.76  
°F, 760 mm... —10.76  
REFRACTIVE INDEX,  $n_{20^\circ\text{D}}$   
Liquid—23.7°C... 1.3712  
Gas—25°C... 1.000703  
SOLUBILITY (in cc.) of Methyl Chloride Gas  
In 100 cc. of solvent (20°C, 760 mm)  
Water... 303  
Benzene... 4723  
Carbon Tetrachloride... 3756  
Glacial Acetic Acid... 3679  
Ethanol... 3740



ANSUL CHEMICAL COMPANY, MARINETTE, WISCONSIN • INDUSTRIAL CHEMICALS • REFRIGERATION PRODUCTS • FIRE FIGHTING EQUIPMENT

#### PRODUCTION

grades. Cases for the elements fit  $\frac{3}{8}$ -,  $\frac{1}{2}$ -,  $\frac{3}{4}$ -, and 1-in. lines. Elements can be used in systems with pressures up to 250 psi.

**Glass-Fiber Tubing:** Apex Fibre Glass Products Division of White Sewing Machine Corp. (Washington & Elm Sts., Cleveland 13) is offering a new line of lightweight, high-strength, corrosion-resistant tubing made of centrifugally molded glass-fiber tubing. The material, comes in 3- to 7-ft. lengths and 6- to 28½-in. diameters. Wall thickness up to  $\frac{3}{8}$  in. are available. The tubing will withstand process pressures up to 150 psi. at temperatures from —65 to 110 F, and process temperatures to 250 F in nonpressure service. The tubing has a tensile strength of over 17,000 psi. and requires support at 5-ft. intervals.

**Leak Detector:** A halide leak detector that weighs only 5 oz., is 6½ in. long and can also be used as a blow-torch is a new product of The McIntire Co. (Okner Parkway, Livingston, N. J.). The instrument will detect leaks as small as  $\frac{1}{2}$  oz./year, McIntire says. It has a replaceable butane cartridge that generates a light blue flame; the flame turns green in presence of a trace of halide. Removal of the leak-detector attachment enables use of the unit as a blow-torch with a pinpoint flame for soldering electrical connections and other small joints.

**Jacketed Valves:** Cooper Alloy Corp.'s Valve & Fitting Division (Bloy St., Hillside, N. J.) is out with a new line of steam-jacketed stainless steel valves said to have improved heat-transfer characteristics. The valves have cast bodies and jackets that may be of stainless steel or other metal. Fabricated jacket design is said to assure clean interior surfaces, open steam passages and a greater jacket volume than integrally cast designs. The new line includes gate, check and globe valves in 1- to 8-in. sizes.

**Portable Pyrometer:** A portable potentiometer-pyrometer with a 22.3-in. scale for direct reading is a new product of Technique Associates (1413 N. Cornell, Indianapolis 2). Called Thermotest Model II, the instrument is designed for laboratory temperature measurements from —200 to 600 F.



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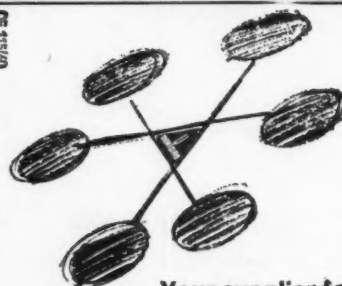
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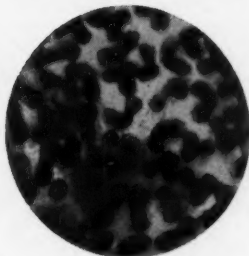
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# FIBERS



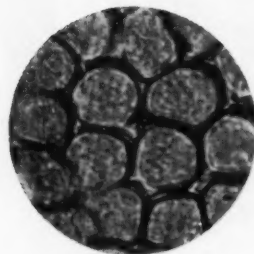
Cross section  
nylon fiber



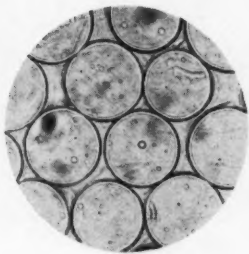
Cross section  
Orlon® acrylic fiber



Cross section  
dynel modacrylic fiber



Cross section  
Dacron® polyester fiber



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polypropylene fiber



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Cotton is most widely used in filter fabrics. Its advantages: relatively low cost, high wet strength, generally good physical characteristics.

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have good resistance to chemicals (especially concentrated acids), mildew and bacteria—in addition to good strength and low moisture absorption. Other synthetic fibers suitable for filter fabric applications: Dacron® polyester and polypropylene.

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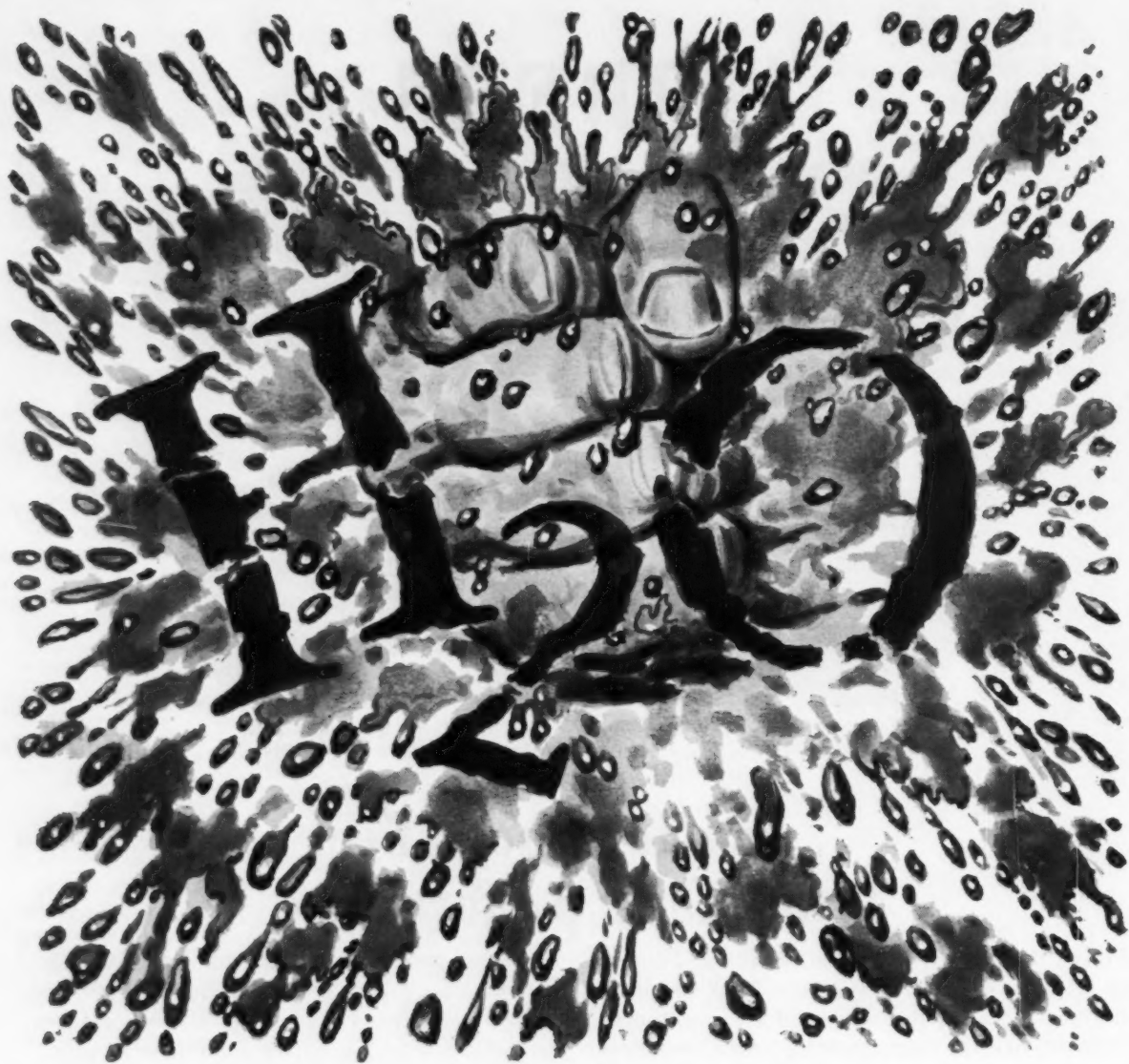
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November 25, 1961 CHEMICAL WEEK 97



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President Abboud holds Sudan to a safe and stable middle course. WIDE WORLD

## In Africa's Eye of Calm

The shabby but venerable Grand Hotel in Khartoum, capitol of Africa's Sudan, is currently enjoying a new surge of patronage. On the big concrete veranda overlooking the muddy Nile, where British administrators once sipped their tonics in the stifling heat, businessmen from Western Europe and emissaries from the Soviet bloc today talk up the deals that may bring a kind of boom to this underdeveloped nation's industrial structure.

Compared with prospects of most other new nations of Africa, Sudan's chances of achieving its desired measure of industrial development, including its expanding chemical process industries, seems good. Although it's wedged between the turbulence and intrigue of the Middle East and

the explosive violence of tropical Africa, the republic of Sudan has achieved political stability under the benign military dictatorship of its President El Ferik (Lt. Gen.) Ibrahim Abboud.

Nationalism runs strong in Sudan, as it does in any new country, but there isn't the xenophobia that scares away foreigners and distorts its own leaders' political and economic decisions. Sudan is wooing foreign capital, but the government so far has kept its hands out of most industrial enterprises.

Adding to this hopeful picture, Sudan already raises enough food to feed its people and has the agricultural potential to develop a strong export business. Respectable economic growth is well under way, and will be

spurred by solid development projects.

**Preparation for Growth:** Since Sudan's national product is rising only about 2.3%/year, "respectable and solid" perhaps best describes its economic performance so far. In the years immediately after World War II, promoters, their pockets stuffed with wartime profits, created the heady atmosphere of an industrial boom by proposing a raft of ventures. Ill-conceived, or suffering from their promoters' lack of technical knowledge, most never got off the ground.

A more solid basis for growth was being laid, meanwhile, by the training of Sudanese civil servants and by basic development projects — e.g., transportation, communications, irrigation, education.

With nine out of 10 Sudanese still dependent on agriculture for a living and per-capita product only about \$75/year, Sudan has a long way to go before it can be called developed. In common with most colonial possessions, its industry was limited pretty much to cottage shops and agricultural processing before it gained independence, which came peacefully on Jan. 1, '56, when the region emerged from joint British-Egyptian control.

**Industry's Rise:** Since then, industrial growth has accelerated. Capital investment in industry rose from less than \$3 million in '56 to \$20 million in '59 and \$43 million last year. Nearly 100 new manufacturing and processing enterprises have been set up, most of them in the last two years.

Two drug plants (primarily turning out products such as aspirin and sulfa drugs) are already in operation, backed, respectively, by Italy's Carlo Erba and IFI and by Britain's Astro Nichols, and four others have been approved by the government. Two plastics molding plants are also in production, another is under construction, and plans for four others have been approved. There are also plans to make polyvinyl chloride pipe, polyethylene tubing, and related products.

Other process industries projects approved: five plants for making paper, cellulose, hardboard and cardboard—one is already under construction; paint plants—one is running



and another is planned; and an oil hydrogenation and margination plant, which will start up soon.

Already operating are plants making carbon dioxide, matches, cosmetics, dry-cell batteries, textiles, shoes, aluminum products.

Other projected plants already approved by the government will turn out, among other things, oxygen and acetylene, glucose and starch, bicycle tubes and tires, glassware, toilet specialties, rubber and plastic footwear, soap powder, chalk and gypsum, varnish and glues.

Two oil refineries are planned. Shell will build a \$15.8-million, 100,000-tons/year refinery near Port Sudan, on the Red Sea, while AGIP, a subsidiary of Italy's Ente Nazionale Idrocarburi (ENI), has also been given approval to build a similar refinery, although construction may hinge on the success of AGIP's local oil explorations. So far no oil has been found in Sudan.

**Private Investors Welcome:** One of Sudan's biggest drawing cards is its amicable attitude toward private enterprise, foreign or domestic, at least in the currently ruling circles. The government has left the entire industrial field open to private investors, and says it will not undertake projects itself, except when private enterprise fails to come forward. So far,

Sudan lies between stormy tropical Africa and the uneasy Middle East.



the government has felt compelled to provide only a 60,000-tons/year sugar mill (due onstream next year), a tannery (biggest in Africa), a plant to make cardboard from waste cotton stalks, and an ammunition plant.

Legally, there are no bars to wholly foreign ownership of an industrial enterprise in Sudan, but, say U.S. government officials, local capital participation "is expected by the Sudanese, and may therefore be advisable." While no laws or regulations distinguish between foreign-owned or domestically owned firms, "there is an unwritten preference for Sudanese participation."

Private investment is governed by Sudan's Approved Enterprises Act of 1956. A special committee meets four times yearly to consider applications for new industrial projects. It considers capital, labor and raw-material requirements, foreign exchange savings, etc. To win approval, a project must be "in the interest of the general public," have sufficient capital, competent management, reasonable chances of success, provide for employment and training of Sudanese, and not unnecessarily duplicate industries already existing in that country.

An approved industry can freely repatriate profits and capital. Its backers are guaranteed compensation in case of nationalization, can get a tax holiday of up to five years (depending on the industry's size), tariff protection, reduction of duties on raw materials and of railway rates, and other benefits.

But there are some fears that this free-enterprise spirit may wane. One U.S. businessman notes that the Sudanese government is talking about putting a price floor on gum arabic. In the old days, when the handful of wealthy families controlled the country's economy, he says, this wouldn't have been considered. Now there's a chance that it will go through.

**Growing Market:** How deeply the present government would step into industry would depend on actions by industry itself. If private investment—particularly foreign investment—isn't heavy enough to meet the government's industrialization goal, by its own rules the government will have to step in.

Providing that political stability lasts, private investment will obviously depend finally on the market op-

portunities, not on government incentives or on the desire to perpetuate private enterprise. And with a population of only 12 million, the nation's market potential is limited, even though it's population is growing at the rapid rate of 2.8%/year.

**Making the Effort:** Nevertheless, it's a market that's already attracting increasing sales efforts and investment. Last year Sudan's total chemical and pharmaceutical imports rose about 40%, to \$5.9 million. U.S. sales to Sudan, incidentally, accounted for only a sliver of this—\$62,404. But in the first eight months of '61 the total of U.S. exports of chemical and allied products to Sudan rose to \$1.2 million. (U.S. drug companies, through their European subsidiaries, probably racked up more sales than show up in the U.S. export figures.)

And now that development projects are under way, Sudan's chemical and pharmaceutical products market is certain to continue growing. Pharmaceutical sales agents in Sudan say their business is gaining at a minimum of 10%/year, and one company says that sales are doubling every year, as new hospitals and clinics are built and as more Sudanese doctors qualify for practice.

Over the next five years, the government's projects are expected to boost annual consumption of insecticides to \$8.6 million and pharmaceuticals to \$11.5 million.

**Imports Favored:** The current drive to set up light industries will favor the import of chemicals more than of pharmaceuticals. Plans to establish light industries—e.g., plastics, textile and sugar plants—will create new markets for chemicals that won't be supplied by local production.

The new drug plants projected and already in operation may limit the import of certain drugs. To protect their growing interests in Sudan, a number of foreign companies are considering investments of their own. British firms, for example, say they might put up plants in Sudan, not so much because they expect high profits but because they want to get there before Italian or West German companies move in.

**Well-Filled Coffers:** Encouraging the surge of business in Sudan are the favorable economic conditions that have prevailed since General Aboud's coup in '58. In an effort to





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boost the price of cotton (which provides about 70% of Sudan's foreign exchange earnings and more than half its total revenue), the former government held cotton off the market during the Suez crises of '56-'57. Result: European spinners bought elsewhere, and Sudan found itself with two years' harvest of unsold cotton.

Abboud reversed policy, sold the whole backlog during the '59-'60 season, at high prices. Result: after three years of deficit Sudan had a favorable trade balance in '59 and '60. Since more money was available, import bars were lifted. And since coffers well filled again, the government could maintain economic stability by tightening its economic policy and balancing its budget, without strangling development.

**Diversification:** But because reliance on a single commodity for foreign exchange and national wealth is hazardous, to say the least, the government is trying to diversify and increase its exports.

Sudan's greatest potential source of export earnings is the land—it's the biggest country in Africa. The bulk of its 12-million population spreads over 250 million arable acres, but only about 4% of this vast area is under cultivation.

The key to opening up this treasure chest—and the one thing that unites a people of varying colors, religions, cultures, languages and surroundings—is the Nile, which churns like a boiling caldron of hot chocolate for 2,150 miles northward across the country, through some of the world's driest landscape.

The Gezira land reclamation and irrigation project, begun by the British in '25, opened 1 million acres to cultivation in a triangle between the Blue and White Nile rivers—an area that now produces more than half of Sudan's wealth. Moving toward completion next year, the \$107.8-million Managil extension to Gezira will add 1.2 million acres to Sudan's vital cotton growing area, while other vast tracts will be watered by the Roseires Dam and Khashm El Girba project, just getting under way.

**Seven-Year Plan:** These new projects are included in the \$700-million, seven-year development plan now slated—after some delay—to be launched in March. Besides the vast

irrigation projects, it will include airports, bridges, hydroelectric plants, roads and the expansion of the rail and communications systems. And about \$75 million is earmarked for agricultural diversification projects, including the extension of current experiments in growing tea, coffee, sugar, cacao and castor beans.

A large part of the financing for these projects will come from Sudan's government treasury. The rest will be supplied by international lending organizations and foreign governments. When the program gets under way, over-all consumption will increase as money is pumped into the economy, while the projects themselves will consume large quantities of chemical products and provide the foundations for further industrial growth.

**Holding the Line:** Promising as this outlook is, it must be weighed against the political realities that will be decisive in determining Sudan's future. Today the republic is politically more stable than most African and Mideastern countries. The question is: How long can this enforced stability last? The government is a military dictatorship, and, as military dictatorships go in that part of the world, it will likely be transitory.

Given time, an orderly political life could emerge in Sudan. But many factors are working against that possibility. They are clear in the country's history. When General Abboud seized power in '58 (at the request of the Prime Minister Abdullah Khallil, his relative), the country was riven by bickering within the coalition government and conflict between the many political parties and the two chief religious sects and their subdivisions. The central government had no real local control, and it was in dangerous financial straits, ripe for collapse and perhaps a radical takeover. Moreover, it was under pressure from the ambitious Colonel Nasser of Egypt.

With fatherly military discipline, Abboud has been able to enforce "stability." But troublesome forces nudge their way to the surface. With improving economic conditions, civilian politicians have been drumming for a year for the Army to return to the barracks and the country to constitutional rule. Last July, Abboud slapped 15 politicians—including Khallil—into jail for demanding elections.

In August, 15 people were killed near Khartoum when a group of young demonstrators ignored an order to disperse.

In the North, Wadi Halfans are furious about being flooded out of their dwelling places by the High Aswan Dam and are resisting resettlement. In the South, Christian converts, sometimes supported by European and American missionaries, are revolting against Abboud's Islamicization and Arabization campaigns. As Abboud pushes his program to unify the Christian-educated Southerners with the Moslem Northerners, tension mounts.

Looking outside his borders, Abboud must be wary of the infection spreading from troubled Black Africa. He must keep free of dangerous entanglements in the Middle East, while living up to what he considers Sudan's role there. And, above all, he tries to tread a safe middle course in the East-West cold war, seeking good relations and untied aid from both sides—he has been adjudged "one of the most neutral of neutrals."

"Army rule is necessary for a while to keep stability and order," Abboud says, and most observers would probably agree with him. Abboud seems to be in firm control of the Army, and with its backing, he should be able to hold sway in Sudan for some time.

If the time is long enough, the dreams and deals being conjured up on the veranda of the Grand Hotel have a good chance of becoming realities.

## Insurance Ready

**The U.S. State Dept.'s new Agency for International Development (AID) is now taking applications for the new foreign-investment guarantee program.**

Adding to existing protection against losses due to inconvertibility, expropriation and war, the new program includes losses from revolution and insurrection. Covered for the first time: dollar investments in wholly owned subsidiaries of U.S. firms.

Certain "special and specific cases" that rank high in a host country's development plan may also be eligible for an "all-risk guaranty," which covers up to 75%—but most commonly 50%—of dollar investment losses.





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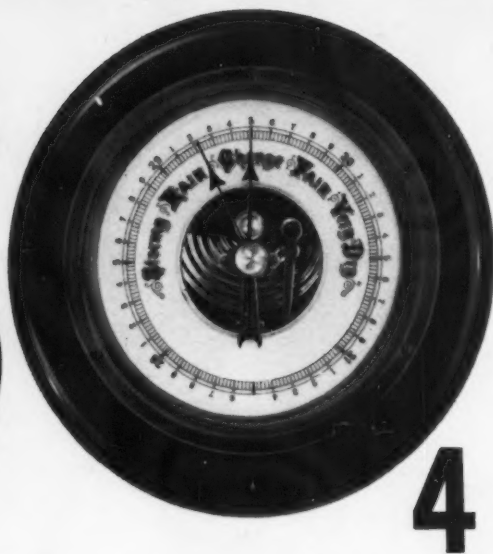
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# Market Newsletter

CHEMICAL WEEK

November 25, 1961

**Within a day of the maleic/fumaric price drop,** styrene-maleic anhydride copolymer prices were reduced by Texas Butadiene & Chemical "to broaden potential applications for the resin."

Most anhydrous polymers in TBC's SMA series were reduced to 54¢/lb., delivered, from the previous 57¢/lb. f.o.b. South Miami, Fla.; polymer SMA 3000A was reduced to 49¢/lb., delivered, from the previous 57¢/lb., f.o.b. Miami. Prices are for volume quantities.

A TBC spokesman says timing of the polymer price cuts with maleic anhydride cuts was "purely coincidental." There is no indication that polymer prices will come down further because of the raw material price reduction. At the moment, TBC has no long-range commitments to buy maleic from any one producer—but may make such arrangements "with one or two" maleic producers in the future.

**Producers of maleic and fumaric anhydrides didn't hesitate** in posting reduced prices "to meet the competition" after Monsanto and Heyden Newport dropped tabs last week. Maleic went down 1¢/lb. to 22½¢/lb. (molten) and 22½¢/lb. in carload bag lots; fumaric dropped ½¢/lb. to 22¼¢/lb. in carload bag lots.

Producers gave no reasons for the cuts—probably assuming it's generally known there is more than enough of these chemicals around.

**Price reductions ranging up to about 10% on citric acid** and sodium citrate are posted by Pfizer. Selected quotes: U.S.P. anhydrous and hydrous acids, in lots of 10,000 lbs., are priced at 28¢/lb.; U.S.P. sodium citrate, in 200-lb. drums, is 29¢/lb.

Pfizer says the cuts are due to "changes in market conditions both here and abroad." This may refer, in part, to the price-cutting hassle that erupted in Mexico earlier this year when Miles Chemical put its \$1.5-million citric acid plant onstream at Cuernavaca (*CW Market Newsletter*, May 6).

**Pfizer will make monosodium glutamate** for the food industry. Commercial Solvents recently said it would make the salt on a commercial scale.

**A big, 1,200 tons/day, sulfuric acid unit has been put onstream** at Tampa, Fla., by U. S. Phosphoric Division of Tennessee Corp. Most of the output will be used captively to make agricultural products. The unit—which uses Frasch sulfur as raw material—was put up by Leonard Construction Co. using know-how provided by Monsanto.



## Market Newsletter

(Continued)

**An expected boom in demand for ammonium nitrate/fuel oil** blasting mixtures prompts Canadian Industries Ltd. (Montreal, Que.) to cut price of its Amex-11 nitrate-oil mixture. New prices range from \$4.85 to \$5.85 (all quantities in 50-lb. bags) depending on point of purchase. The price cut is also justified on grounds that less money will henceforth be spent on development work, which is said to be almost completed.

Lingering doubts about potential use of ammonium nitrate blasting materials in underground mining have dissipated—at least at CIL. The firm says it expects to sell large amounts for underground use—much of it probably for forthcoming potash mining in Canada. Salt and potash mining are the two areas of underground mining to which ammonium nitrate appears to be most applicable (*CW*, Oct. 7, p. 111).

Until this year dynamite held about 80% of an estimated 175-million-lbs./year market (exact statistics are not available in Canada). One informed Canadian source suggests that underground mining explosives represent at least 50% of the total Dominion explosives market.

CIL hints that ammonium nitrate/fuel oil mixing plants will be going up in several new locations (observers figure Sudbury, Kimberley and Noranda as likely locations). Moreover, CIL has cut back on dynamite production by reducing working force at the James Island plant in British Columbia (the firm has a more modern nitroglycerin unit at Calgary).

•  
**Combined soap and synthetic detergent sales were up 1.6%** in the first nine months of '61 compared with the same period in '60; total sales of 3.39 billion lbs. were worth more than \$865 million (up 1.1%).

According to manufacturer reports to the Assn. of American Soap & Glycerine Producers, syndet sales increased by 3.5% to almost 2.62 billion lbs., worth \$628 million (up 2.4%). Biggest syndet gains were racked up by liquids—up 11.7% to almost 531 million lbs., valued at more than \$164 million. Solid syndets increased sales 1.5% to more than 2 billion lbs., while value increased 0.5% to \$444.6 million.

Soap sales slipped again—to 771.5 million lbs. (\$237.2 million) from 805.3 million lbs. (\$242.5 million) in the first nine months of '60.

•  
**Dixie Chemicals' new custom-processing fractionating unit** is now in use at Houston, Tex. The company says it's the first installation of its kind in the South and Southwest (*CW*, Sept. 17, '60, p. 83).

The unit can process 2,000-4,000 lbs. of stock/hour in batch or continuous process; it handles vacuum, atmospheric, pressure, azeotropic and extractive distillations.

Dixie will process by-products or co-products on a toll basis for producers not equipped to do their own processing—or will negotiate to buy unwanted raw materials.



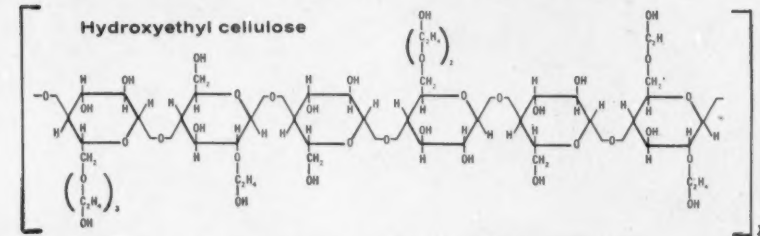
# PROGRESS REPORT

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choice as a cost cutting replacement for anionic materials such as the alginates.

Free-flowing CELLOSIZES HEC, a non-ionic synthetic colloid, dissolves in hot or cold water without cooking, and has exceptional tolerance for dissolved salts, papermaker's alum, gums, and adhesives, including borate-stabilized adhesives. Solutions of CELLOSIZES HEC are not tacky and cause no picking on the rolls.

CELLOSIZES HEC films are clear, flexible, and virtually insoluble in the organic solvents used in inks and overcoat varnishes—making CELLOSIZES HEC superior as a gloss and ink holdout surface size for paperboard. These same properties suggest the use of CELLOSIZES HEC as a grease-resistant coating for paper and paperboard.

CELLOSIZES HEC is available in seven uniform grades covering a wide range of viscosities. In addition, any two grades of CELLOSIZES HEC may be mixed to achieve the optimum total solids-viscosity combination for each mill.

The highest viscosity grade of CELLOSIZES

HEC consistent with the total solids needed to meet board specifications should be selected for mill evaluation. If the water box, calender stack, or coater is kept at elevated temperatures, a considerably higher viscosity grade may be used than at room temperature. The most viscous grade is recommended for partial replacement of starch.

Full information on CELLOSIZES hydroxyethyl cellulose is available from your CARBIDE Technical Representative, or by checking the coupon.

## Four NIAX polyethers that reduce the cost of rigid urethane foams

NIAX Hexol LS-490, Pentol LA-700, Pentol LA-475, and Triol LK-380 are four polyethers that have demonstrated their effectiveness in providing improved formulations through custom control of urethane properties. These materials give rigid foam manufacturers their broadest opportunity to select the right combination of properties for better, lower-cost urethanes.

NIAX Hexol LS-490, a low-viscosity sorbitol adduct, is the newest addition to CARBIDE's already broad line of polyethers. NIAX LS-490 provides easily-handled formulations with excellent dimensional stability, and is high in cross-linking action when used in rigid foams.

NIAX Pentol LA-700 is an effective amine-based polyol, low in molecular

weight and penta-functional. This polyether is particularly useful as a cross-linker in rigid and semi-rigid foams, as well as sprayable formulations. NIAX Pentol LA-475 is particularly useful in sprayable rigid foam systems.

NIAX Triol LK-380 gives rigid foams with excellent humid aging properties, high load-bearing and thermal insulation properties and the lowest water-vapor permeability attainable.

For more information on NIAX polyethers, ask your CARBIDE Technical Representative, or use the coupon below.

## Two low-toxicity glycol-ethers

To its family of materials for food-packaging and cosmetic applications, CARBIDE has added two new and interesting propylene oxide-derived glycol-ethers—UCAR Solvents LM and 2LM.

The LM member is the monomethyl ether of propylene glycol and 2LM is the monomethyl ether of dipropylene glycol.

Both of these new materials have combinations of physical, chemical, toxicological, and solubility characteristics that are useful in a variety of applications.

Because of their relatively low toxicity, UCAR Solvents LM and 2LM merit consideration for use as solvents and humectants in food-packaging and cosmetic applications, as well as other skin-contact preparations.

The quality and purity of these new UCAR Solvents meet all contemporary specifications, with the additional advantages of narrower boiling ranges and lower water content.

For more information on UCAR Solvents LM and 2LM—now available in commercial quantities—call your CARBIDE Technical Representative, or check the coupon.

CELLOSIZES, NIAX, and UCAR are registered trade marks.

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Div. of Union Carbide Corporation  
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Send information on:

- ☐ CELLOSIZES HEC  
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☐ Low-toxicity Glycol-Ethers

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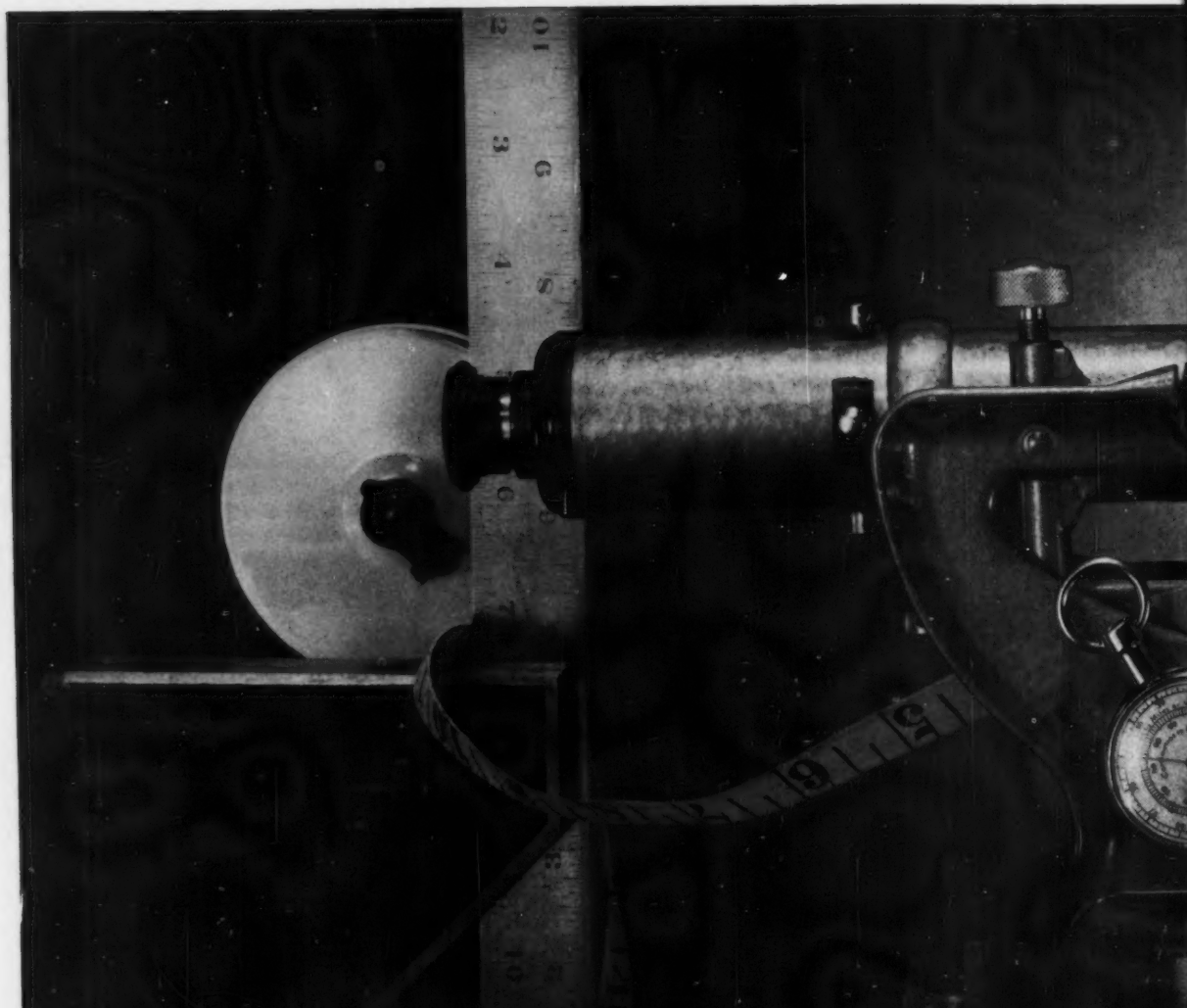
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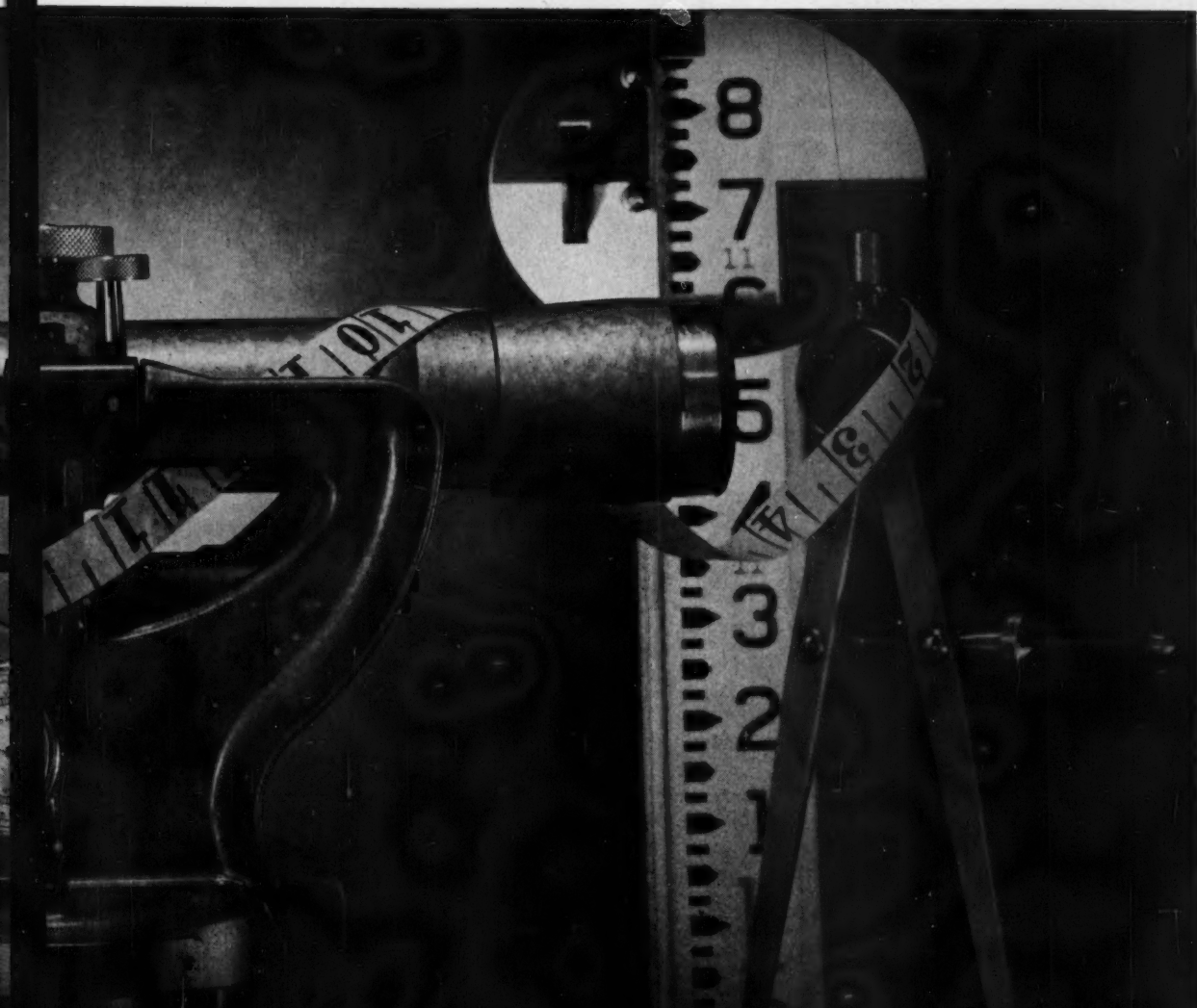




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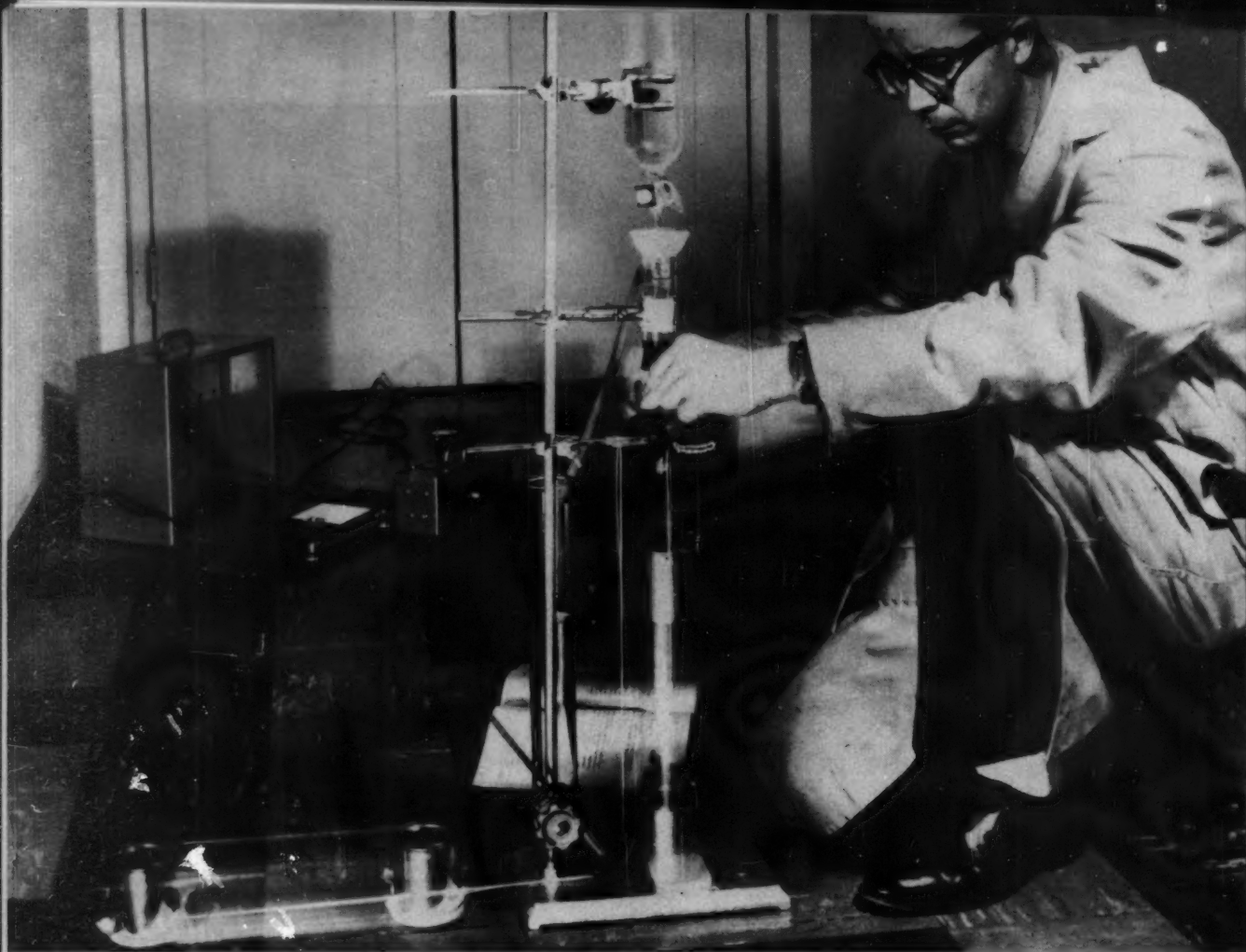
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Comparative slip resistance of floor wax is determined by this special apparatus devised by Neville chemists. Water enters top container by a constant

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## Unique slip test proves value of Nevillac® as wax modifier

To show the adaptability of Nevillac, Neville Chemical Company's hydroxy resin, as a partial replacement for many expensive natural waxes, a large number of tests were made on floor waxes containing Nevillac. The results were most gratifying. Nevillac was found to promote a marked improvement in gloss, better-than-average non-slip quality, good water resistance yet sufficient removability and satisfactory hardness.

This is but one example of the great versatility of the Neville family of hydroxy resins. They present the formulator with a range of film hardness and plasticization through a choice of softening points. The Nevillac

resins are so widely compatible with a host of other materials, that they often act as agents in bringing together materials normally incompatible. Nevillac also offers lower hot-melt blending temperatures than most synthetics, possesses permanent plasticity, good light stability and ease of emulsification. In addition, Nevillac imparts added tack and adhesion properties to compounds and accentuates resistance to acids and alkali.

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**Neville Chemical Company, Pittsburgh 25, Pa.**

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### Neville Products

**Resins**—Coumarone-Indene, Hydrocarbon (Thermoplastic and Heat Reactive), Hydroxy • **Oils**—Plasticizing, Neutral, Rubber Reclaiming, Shingle Stain • **Solvents**—Aromatic (Refined and Crude), Semi-Aromatic (Refined and Crude). • **Antioxidants**—Non-Staining Rubber • **High Purity Indene** • **Indene Derivatives** • **Crude Naphthalene**.



## Price: Big 'If' in Rosin Outlook

This week rosin inventories continued their growth. Prices have fallen 20% since January. And the worst is not over. Inventories, now at a new high for the year, will probably mount higher during the next several months. The big question now: "Will the rosin tabs continue their skid?"

Reason for the cloudy outlook: rosin producers are trying hard to keep prices at the current level (\$11.50-12/100 lbs. gum rosin) despite larger inventories. They have been successful in stabilizing prices for the last five months. But rosin prices have been extremely responsive to rosin availability. When inventories dropped, prices leaped; when warehouses filled, prices slumped (see chart). And now inventories are beginning to bulge, with no improvement in sight.

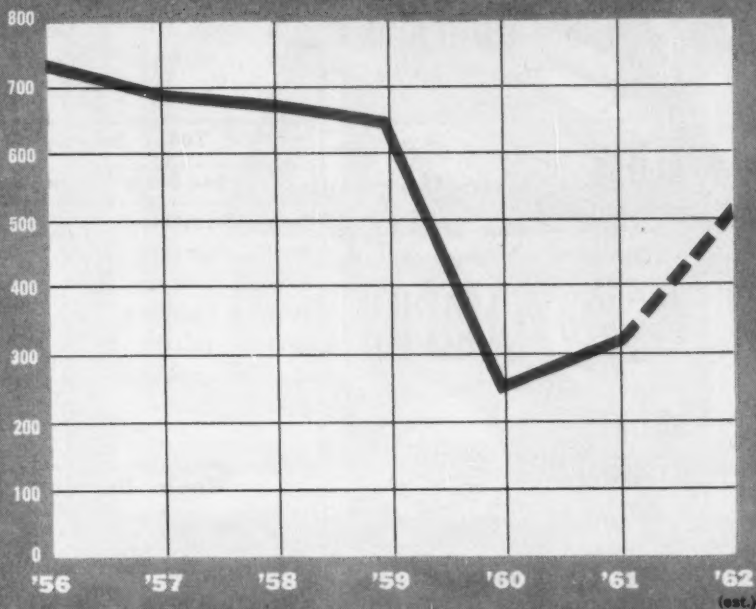
For example, inventories total about 400,000 drums, a 100,000 advance over January's 190,000 drums. But by April of next year inventories should hit a three-year high and pass the 500,000-drums mark. Cause: high production and decreased exports during the '61-'62 crop year. Domestic demand, although growing, will not be able to absorb the excess at present price levels.

During the '61-'62 crop year, exports will likely decline about 25%, about 157,000 drums, compared with the similar '60-'61 period. Rosin production will advance about 60,000 drums. But domestic demand will expand only about 23,000 drums, resulting in inventory buildup of nearly 200,000 drums in only one year.

**Exports Drop:** Although foreign demand will expand at least 5% during the current crop year (April 1, '61-March 31, '62), foreign production will probably step up about 7% during the same period. In addition, inventories overseas are now high as a result of the '59 and '60 buildup, and some buying will be deferred until these stocks are whittled down.

But the long-range export outlook is still encouraging. Although foreign rosin production is expanding rapidly, so is demand. For example, the

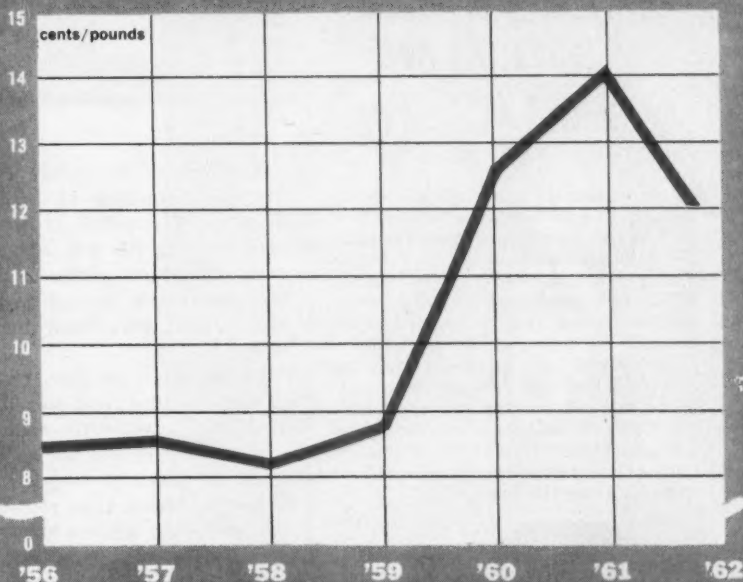
**Rosin inventories\* climb as...**



Source: U. S. Dept. of Agriculture.  
Units: Drums, 520 lbs. net;

\*March 31 of each year.

**...rosin prices come down**



Source: U. S. Dept. of Agriculture.



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## MARKETS

### Rosin Production

	Gum	Steam Distilled	Tall Oil
'55-'56	453,000	1,369,000	137,000
'56-'57	444,590	1,324,200	229,000
'57-'58	399,910	1,195,990	269,270
'58-'59	369,350	1,182,620	305,060
'59-'60	334,110	1,198,690	382,970
'60-'61	370,150	1,219,850	419,960
'61-'62	470,090	1,134,460	466,155

### Total Supply

	Total Output	Imports	Grand Total
'55-'56	1,959,000	650	1,959,650
'56-'57	1,997,810	270	1,998,080
'57-'58	1,865,170	400	1,865,570
'58-'59	1,857,030	600	1,857,630
'59-'60	1,915,770	2,110	1,917,880
'60-'61	2,009,960	350	2,010,310
'61-'62	2,070,705	400	2,071,105

### Rosin Demand

	Domestic	Exports	Total
'55-'56	1,381,790	551,700	1,933,490
'56-'57	1,286,950	604,010	1,890,960
'57-'58	1,354,430	554,360	1,898,790
'58-'59	1,402,190	508,950	1,911,140
'59-'60	1,567,880	782,010	2,349,890
'60-'61	1,409,980	627,590	2,037,570
'61-'62	1,433,980	470,692	1,902,980

Units: Drums, 520 lbs. net. Source: U.S. Dept. of Agriculture

U.S. Dept. of Agriculture estimates that foreign markets will continue to draw about one-third of total U.S. output during the next 10 years.

Its production profile is complex because rosin is derived from three basic sources: gum, wood stumps and tall oil.\*

During this crop year, production of steam-distilled rosin will likely decline about 10%, while material derived from gum and tall oil will advance 27 and 11%, respectively.

**Tallying Gains:** Gum rosin production will reach about 470,000 drums during the '61-'62 crop year—100,-

\* Gum rosin is obtained by tapping pine trees; wood rosin from the steam distillation of wood stumps; and tall oil rosin from the fractionation of crude tall oil, a by-product of sulfate pulping operations.

## mixed crystals of SYMMETRICAL FATTY ESTERS

W-G-S WAX-90 is a mixture of monohydric fatty alcohol esters of fatty acids that are C-12 to C-18, some of which are saturated and some unsaturated.

The crystals are of different sizes. Their solubility is good at 100° F, but poor below 60° F.

The ester is highly stable against oxidation, yet can be reacted.

WAX-90 is readily available, moderately priced.

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## African refinery

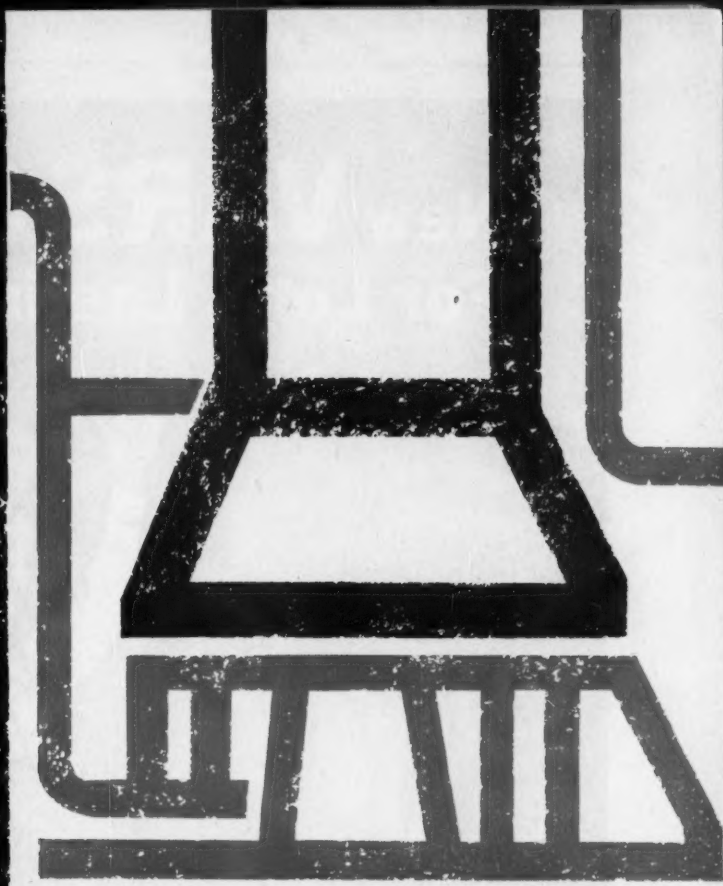
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Sixteen months to build a refinery in Mozambique . . . on the east coast of Africa near the port of Lourenco Marques . . . at considerable distances from the industries where almost all the refinery equipment had been constructed.

But build it Procon did! Not in 16 months—but in 12 months. Four months ahead of schedule! A modern 12,000 BSD refinery, it includes Platforming®, Unifining®, Merox™, and crude distillation units plus complete supporting facilities.

On stream for Sociedade Nacional de Refinacao de Petroleos (SONAREP) a subsidiary of the Portuguese petroleum marketing firm, Sociedade Nacional de Petroleos (SONAP), this refinery is another tribute to Procon's proven capabilities . . . to tackle the toughest job . . . and complete it in the shortest possible time.



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HUMBLE OIL & REFINING COMPANY





*Need a  
tasteless,  
odorless,  
colorless  
gum with lack  
of syneresis?*

# TRY METHOCEL

Methocel® methylcellulose offers unique combinations of properties found in *no other gum*. It serves as a stable thickener, binder and bulking agent. Food manufacturers are particularly interested in this tasteless, odorless, colorless gum that offers lack of syneresis—that is, prevents undesirable separation of water from the food product. Methocel is also thermo-gelling.

Send for a sample of Methocel.  
See pages 118 & 119 for details.



THE DOW CHEMICAL COMPANY  
Midland, Michigan

## MARKETS

### Rosin End-uses

	'55-'56	'59-'60	'60-'61
Adhesives	23,490	19,365	27,257
Chemicals, pharmaceuticals	446,822	563,772	541,015
Ester gum, synthetic resins	239,494	239,961	206,600
Foundry, foundry supplies	506	148	38
Insecticides, disinfectants	1,448	1,161	993
Oils, greases	16,402	11,259	9,832
Paint, varnish, lacquer	64,994	57,322	46,923
Paper, paper size	481,283	567,716	480,101
Printing ink	8,197	10,932	11,053
Rubber	43,154	75,365	76,061
Shoe polish and shoe material	2,899	1,698	1,224
Soap	31,695	6,275	845
Other industries	21,406	12,906	8,047
<b>TOTAL DOMESTIC DEMAND</b>	<b>1,381,790</b>	<b>1,567,880</b>	<b>1,409,980</b>
Exports	551,700	782,010	627,590
<b>GRAND TOTAL</b>	<b>1,933,490</b>	<b>2,349,890</b>	<b>2,037,570</b>

Units: Drums, 520 lbs. net. Source: U.S. Dept. of Agriculture

000 more than '60's total. Last year gum rosin output also showed a gain, about 11%. This was the first production advance after a 10-year decline. High prices, which spell profits to the farmers, were mainly responsible for these sizable production hikes. And if gum rosin prices stay at \$12/-100 lbs., or higher, further output increases are almost certain.

Tall oil rosin production will reach about 465,000 drums during this crop year—a gain of 45,000 drums. Rosin from tall oil fractionation has been consistently gaining for several years and will continue to grow in importance. Its availability depends not only on sulfate pulp production, and thus tall oil availability, but also on demand for tall oil fatty acids—co-products in tall oil fractionation.

The U.S. Dept. of Commerce says that wood pulp production will reg-

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a thickening  
gum that's  
surface-active,  
viscosity-  
stable?*

# TRY METHOCEL

There's a Methocel® product for almost any thickening use, in almost any viscosity range. Surface-active Methocel is used as an excellent emulsifier, emulsion stabilizer and protective colloid. Easily soluble in water and/or organic solvents, Methocel methylcellulose can simplify the formulating and production of many kinds of products. For example, latex paints, pharmaceuticals, foods, chemical specialties, construction materials.

Send for a sample of Methocel.  
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water and/or  
organo-solubility,  
as you wish?*

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Choose from over 50 different products of Methocel® methylcellulose to get the exact degree and kind of solubility your process requires. You can also select from a wide viscosity range . . . 2% solutions range from 10 to 15,000 centipoises. Surface-active Methocel is an excellent thickener, protective colloid, and suspending agent. Suspensions are stable and uniform over long periods of time. Methocel is resistant to the growth of microorganisms.

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THE DOW CHEMICAL COMPANY  
Midland, Michigan

### MARKETS

ister a 30% gain by '65. And sulfate pulping operations are expected to grow even faster, according to a recent survey by the U.S. Pulp Producers Assn. Moreover, demand for tall oil fatty acids has been strong, and market observers expect continued demand growth during the next 10 years.

Glidden's George Eick predicts that almost all the tall oil available by '70 will be earmarked for fractionating columns (about 85% is now fractionated). This means that by '70 tall oil rosin will flood the market at the rate of 778,000 drums/year.

After reaching a record high in '55, steam-distilled rosin from tree stumps has been on the decline. By '65 production will probably slip to about half of the current level. Reason: diminishing supply of raw material—old (100 years or more) long-leaf slash pine stumps. In modern pulping operations, pine trees are cut after 30 years' growth. Stumps of such trees are not suitable for rosin and turpentine production. Unless rosin prices increase—which is unlikely—or unless ponderosa pine stumps can be used economically, production of steam-distilled wood rosin will probably continue to shrink rapidly.

Domestic rosin demand by the end of this crop year will probably reach 1,433,000 drums—only about 20,000 drums more than the '60-'61 level. But some market observers—e.g., Chematar's H. L. Meyer—feel that demand can advance as much as 10%, or more than 100,000 drums.

Rosin finds application in a raft of end products, but paper size, resins and chemical synthesis take the lion's share—about 85%—of total domestic demand. And paper sizing is the most fluctuating end-use. It is not likely, however, that this application will result in a big gain in rosin requirements in the future, unless prices are drastically reduced. Growth is more likely to parallel paper demand, which will advance only about 3% next year. During the '60-'61 crop year, demand for paper-size declined about 88,000 drums, despite the slight increase in paper production during that period. High rosin prices in '60 drove many consumers to alternate materials—e.g., alkyl ketene dimers. But, if gum rosin prices again drop to less than \$10/100 lbs., it appears

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compatible with  
heavy metal salts  
and alkaline  
earth elements?*

## TRY METHOCEL

Methocel® methylcellulose offers valuable combinations of properties unavailable in any other gum, natural or synthetic. For example, nonionic Methocel is compatible with a wide range of materials, and it is not precipitated as an insoluble salt by multivalent metal ions. In addition, Methocel is used as an excellent film former, binder, thickener. Viscosity stability is excellent over a pH range from about pH 3 to 12.

Send for a sample of Methocel.  
See pages 118 & 119 for details.



THE DOW CHEMICAL COMPANY  
Midland, Michigan



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a low-ash,  
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safe for human  
consumption?*

## TRY METHOCEL

Colorless, tasteless, odorless Methocel® methylcellulose products are available in grades for use in foods and pharmaceuticals. They are ideal binding and thickening agents and are not metabolized when ingested. Ash content is negligible. Methocel is also unique in that it is thermo-gelling, a property of great value in helping control water migration in food and pharmaceuticals. And because Methocel is surface-active, it is an effective emulsion stabilizer.

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See pages 118 & 119 for details.



THE DOW CHEMICAL COMPANY  
Midland, Michigan

that much of this lost market will be won back.

Chemical-derivative production is currently the largest rosin user. During the '60-'61 crop year more than 540,000 drums went into this basket category, according to USDA. Companies manufacturing modified rosins forecast moderate long-range growth in this end-use. The future for synthetic rosins based on rosin raw material is not equally bright, in fact, though only a small decline has been registered during the past five years, the long-range trend is down.

The remaining rosin end-uses have a varied outlook—about half are advancing, while the other half are declining. The sum of these pluses and minuses is a slight pickup in demand for rosin at current prices. But if rosin tabs again slip below the \$10 mark, demand should spurt.

Meanwhile, rosin inventories continue to climb, while producers keep prices up. It seems certain now, however, that all rosin producers will re-evaluate their pricing policies as soon as inventory problems become a little more onerous.

### MARKETPLACE

**Explosives:** Domestic industrial explosives demand reached a record high in '60, according to Bureau of Mines, U.S. Dept. of Interior. Total consumption during '60: 1.173 billion lbs.—an increase of 12% over the previous high, 1.049 billion lbs., in '59. Behind the gain: expanding use of ammonium nitrate as a blasting agent in mining, quarrying and construction.

Ammonium nitrate demand in completely processed and unprocessed explosives for industrial applications advanced 13% during '60. Consumption of ammonium nitrate combined with "high explosives other than permissibles" advanced 14%, to 1,089 billion lbs. Demand for these two types of explosives advanced 46% in metal mining, 19% in coal mining (anthracite and bituminous), and 14% for "all other purposes" but declined in railway and construction industries.

**Inorganics:** According to Bureau of Census, inorganic chemical shipments registered another gain last year. In '60, shipments by primary producers totaled about \$2.475 billion—a 2%

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inert gum  
to form strong,  
water-soluble  
films?*

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Methocel® methylcellulose forms tough, flexible, clear, cold-water-soluble films. They're grease and oil resistant, with good ink holdout. Or perhaps you want a thickener, binder or water-retention agent. Whatever the use, you'll find the best combination of gum properties in Methocel. There are over 50 products to choose from, for use in almost every kind of product from paint to pharmaceuticals, from cosmetics to concrete.

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THE DOW CHEMICAL COMPANY  
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# TRY METHOCEL FOR ALL THESE GUM PROPERTIES...

thickener—film former—binder—stabilizer  
—thermal gelling—water retention agent

This family of over 50 Methocel® products offers unique combinations of properties where thickening and/or a number of other actions are required. Methocel methylcellulose is soluble in both cold water and organic solvents. Available viscosities range from ten to 15,000 centipoises in 2% solutions, depending on the Methocel product selected. It's a film former, an emulsifier and a suspending

agent for almost any kind of water-based product. And because Methocel is nonionic, solution viscosity is highly stable. Colorless, tasteless, odorless Methocel products are available in grades used in pharmaceuticals and food products as an acceptable food additive. They exhibit lack of syneresis as well as promoting thermogelling action, prime advantages for manufacturers of prepared foods.

## SOLUBILITY

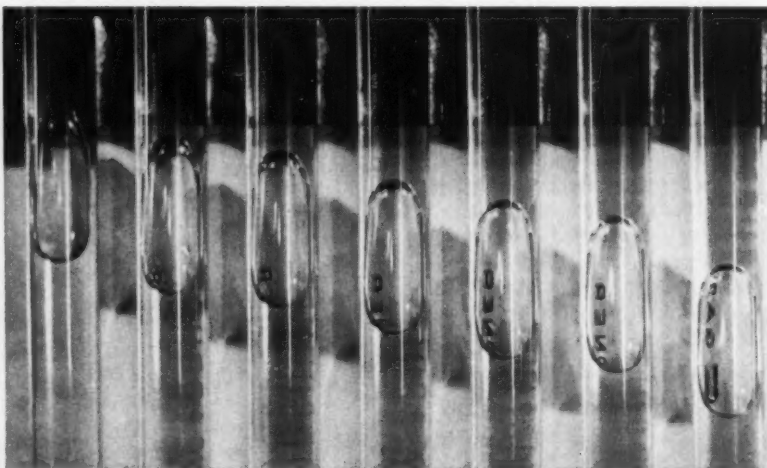
You can select the degree or type of solubility you need. Methocel products are available which possess solubility in water and in organic solvents. Solubility can thus be varied to meet product requirements.

## VISCOSITY STABILITY

Viscosities of the various Methocel products range from ten to 15,000 cps. Because they are nonionic, the viscosity of solutions is stable over a wider pH range than other gums, i.e., from about pH 3 to 12. Methocel is very resistant to the growth of microorganisms. Normally it does not require the addition of preservatives.

## THERMAL GELATION

Solutions containing certain types of Methocel gel on heating or cooling in contrast to other gums which gel only on cooling. This unique



Methocel offers a full range of viscosities.

phenomenon is reversible. This is particularly valuable for adhesives which must set up on heating.

Where thermal gelling is a disadvantage, other types of Methocel

are available which do *not* exhibit this property.

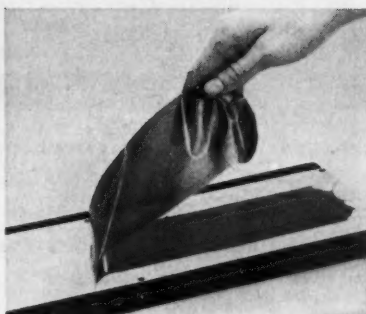
## STRONG FILM FORMER

Methocel can form tough, flexible, clear, water-soluble films which are





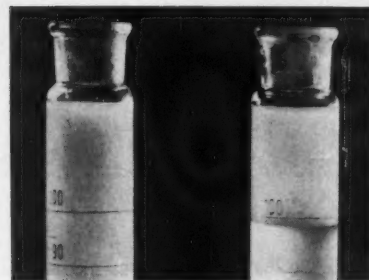
Solutions of Methocel gel on heating.



Tough, water-soluble films can be made with Methocel.

## BINDING AGENT

Methocel products are excellent binders for all kinds of pigments, glass fibers, fillers, colors, toxicants. Being nonionic, Methocel products have a wide range of compatibility with other formulating ingredients.



Methocel forms stable suspensions.

resistant to grease and oil, and can be heat sealed. In addition, they provide good ink, varnish and wax holdout for certain applications. Low viscosity types of Methocel are used to obtain maximum solids. Because specific gravities of the films are low, they usually give superior binding properties or greater area coverage per pound than other gums.

## STABILIZER

All Methocel products are effective stabilizers and protective colloids. Choice of the type to be used depends on the application because protective colloid effects can be very specific both as to type and viscosity. Operating temperatures must also be considered, since ther-

mal gelation properties can be an important factor.

## WATER RETENTION

This property of Methocel is particularly valuable to the food manufacturer. When used as a binder, Methocel exhibits lack of syneresis. Foods do not weep water. In certain types of foods Methocel retards drying out of products, keeping them moist and saleable over long periods of time.

## SURFACE ACTIVITY

Unlike other gums, solutions of Methocel are surface active, reducing the surface tension of water solutions. Methocel is used as a very effective emulsifying and suspending agent.

## WIDE PRODUCT RANGE

The many varying combinations of properties offered by Methocel products are highly advantageous for agricultural compounds, chemical specialties, cosmetics, pharmaceuticals, paints, foods, paper products, textiles and others.

**Send for free samples and information on Methocel products. Be sure to include a brief description of your requirements or product on the coupon.**

**THE DOW CHEMICAL COMPANY**

**DOW**

Midland, Michigan

### THE DOW CHEMICAL COMPANY

Abbott Road Building • Midland, Michigan • Attn: Chemicals Merchandising Dept. 690AM11-25

Please send me Methocel Handbook and a sample of Methocel, of the type most suitable for the specific product or application described below.

\_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 Viscosity range desired \_\_\_\_\_ Solubility ☐ water ☐ organic  
 Name \_\_\_\_\_ Title \_\_\_\_\_  
 Company \_\_\_\_\_  
 Company Address \_\_\_\_\_  
 City \_\_\_\_\_ Zone \_\_\_\_\_ State \_\_\_\_\_



# Chemical Week

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		Los Angeles 17 .....	Robert Yocom		
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## MARKETS

increase over '59's total of about \$2.415 billion.

**Wool:** Wool demand in knitwear continues to recapture markets lost to the synthetics. Wool Bureau reports that wool captured 41% of the knitwear market in '60—a 13% gain over the '58 low, when wool's share was whittled down to about 28%. Demand for wool yarn in knit cloth reached 11.390 billion lbs. in '60—a 22% gain over '58's low of about 11.394 billion. Reasons for the recovery: growing importance of wool knit dresses and design versatility made possible by doubleknits.

**Acrylonitrile:** Japanese producers are trying to curtail increasing acrylonitrile imports. Last month, four Japanese acrylonitrile manufacturers — Nitto, Koatsu, Sumitomo Chemical and Mitsubishi Chemical—cut acrylo tabs 20% to 47¢/kilogram (2.2 lbs.). In addition they have asked the Japanese government to hike the tariff from 20% to 30%.

Further price reductions by the Japanese are anticipated by fall of '62, when production capacity will be increased from 2,250 tons/month to 3,450 tons/month, up 53%. Mitsubishi Chemical will expand monthly capacity from its current 1,000 tons to 1,500 tons; Sumitomo Chemical from 900 tons to 1,200 tons; Nitto Chemical will maintain current capacity of 200 tons until late in the year, when it will be expanded to 600 tons. Toyo Koatsu is now producing 150 tons/month and has given up plans for a joint venture with Mitsui Chemical.

**Carbon Black:** Shipments of carbon black reached 346 million lbs. during third-quarter '61—a 10.8% gain over '60's third quarter. But shipments for the first nine months are still about 5.6% behind the nine-month total last year. After the first and second quarters of this year, shipments were below '60 levels by 20.6 and 12.8%, respectively.

**Petroleum:** Western Nations' petroleum demand will rise about 5%/year through '65, according to Texaco Board Chairman Augustus C. Long. By '65 global petroleum requirements should reach 24 million bbls./day—an advance of about 5.1 million bbls./day over '60.

## Tracers

### TO THE CHEMICAL PROCESS INDUSTRIES

ADDRESS BOX NO. REPLIES TO:  
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255 California St., San Francisco 11, Calif.

### POSITIONS VACANT

**Expanding research laboratory of progressive manufacturer of chemical maintenance products of national scope has opening for chemist.** Must have degree and 3-5 years industrial experience with surface-active agents, emulsions, cleaning compounds or chemical specialties. Aerosol experience desirable. Above average salary, fringe benefits, and bonus of 13-15% of base salary. Send complete scientific and employment resume to Personnel Department, National Laboratories, Division of Lein & Fink Products Corporation, 4934 Lewis Avenue, Toledo 12, Ohio.

**Commercial Development:** We are an expanding company in the fields of chemicals, polymers and plastic products. Openings exist that require imaginative, ambitious men to do a combination of market research, economic evaluations and market development for a wide variety of new products. If you have a degree in chemistry or chemical engineering with applicable experience in the chemical or plastics industry and want to broaden your horizons, send your resume to: Director of Commercial Development, The Richardson Company, 2754 W. Lake Street, Melrose Park, Illinois.

**Tire Compounder-National Rubber Manufacturer** has current position offering unusual growth opportunities for experienced Tire Compounder. Applicants must have Chemical Engineering or Chemistry Degree. Position offers opportunity in the industry's foremost tire development laboratories utilizing latest techniques. Send resume in strict confidence to P-7884, Chemical Week. "An Equal Opportunity Employer"

**Unusual opportunity for Chemical Engineer** with specific background. Top position for man with aerobic fermentation experience who can organize his own development work in the new product field and assist in selecting staff. Established company. Salary open. Write Dept. D, P-7882, Chemical Week.

**Marketing Consultant-Prominent management consulting firm** seeks a man in his early or middle 30's for its permanent staff. Will base in Chicago and work on a broad and stimulating range of marketing problems. We require a Ch. E. degree, and an M.B.A. or M.A. with a marketing emphasis. Experience could be line or staff sales or marketing, or a combination, with some early field sales experience being very helpful. We desire experience to be with a medium to large size chemical process equipment manufacturer. Moderate travel, home all weekends. Commensurate salary and bonus, excellent growth potential. Your reply in detail is invited, in confidence. P-7878, Chemical Week.

**Chemist-Research: Graduate chemist interested** in developing new products in field of adhesives, shoe components, synthetic resins. Enjoy close contact with top management of leading manufacturer. New England location. Salary to \$12,000. Write, stating qualifications concisely to: Dept. CHM, Personnel Search Division, The Personnel Laboratory Inc., 500 Summer St., Stamford, Conn.

### SELLING OPPORTUNITY AVAILABLE

**Chemical Salesman Age 25-35. Position requires** man with initiative and a desire for advancement in expanding marketing division of well established company. Salary-open. Minimum education B.S. in Chemistry. Send resumes to SW-7832, Chemical Week.

### POSITIONS WANTED

**Chemist 35-age 30-experienced in R&D, quality control, engineering & management phases in cosmetic chem specialties & aerosol fields.** Outstanding record. Desire growth opportunity-prefer West Coast. PW-7886, Chemical Week.

**Chemical Sales Executive with successful record** from field sales to Sales Manager. Broad experience in marketing organic and inorganic products to wide diversification of industry. Twenty years one major company, best references. To contact, write PW-7887, Chemical Week.

### SELLING OPPORTUNITIES WANTED

**Sales Engineering Organisation Specializing in** the sale of mechanical equipment to the Petrochemical industries along the Texas and Louisiana Gulf Coast, desires one or two additional accounts. Reply to RA-7569, Chemical Week.

**Seeking Major Account for expanding manufacturer's** representative. All engineers, experienced in equipment, instrument and system sales for Process Industry. Metropolitan New York operation. RA-7823, Chemical Week.

**Industrial Chemicals-for Chicago Area-by sales-** man with over 15 years sales experience in this territory. RA-7842, Chemical Week.

### CONTRACT WORK WANTED

**Custom Grinding-Ultra Fine or Coarse-Specialty** or Volume Blending and Grinding service on unit or contract basis. Complete CO<sub>2</sub> installation for Nylon, Teflon and Heat Sensitive Materials. A. Cramer Corp., 10881 S. Central Avenue, Box 682, Oak Lawn, Illinois.

### PROFESSIONAL SERVICES

**Clark Microanalytical Laboratory—CH. N. S.** Halogen, Fluorine, Oxygen, Alkoxyl, Alkyl, Alkylidene, Acetyl, Terminal Methyl etc. by specialist in organic microchemical analysis. P.O. Box 17, Urbana, Ill. Empire 7-8406.

### SPECIAL SERVICES

**Seek new developments in reproduction papers** and processes? Gorham Laboratories Inc., Gorham, Maine. Contract research.

### BUSINESS OPPORTUNITIES

**Products or Processes Wanted for License** by organic chemical manufacturer. New or established products or processes. All replies confidential. BO-7795, Chemical Week.

**European Markets. Need of help on the spot?** French Engineer, (California resident, 10 years top American references) would accept overseas technico-commercial missions: contacts, inquiries, surveys, liaison services, negotiations or other short-term assignments: trouble-shooting, lab duties, etc. Georges Fannier, 132-3/4 S. Carondelet, Los Angeles 57, Calif.

**Want To Buy-Any Business that makes chemicals** or chemical specialties for industry. Will go to \$250,000. BO-7850, Chemical Week.

### EQUIPMENT FOR SALE

**Liquidation-Multi-million dollar chemical plant** at North Little Rock, Ark. Stainless Steel & Glass-Lined equip. Send for detailed circular. Perry, 1415 N. 6th St., Phila. 22, Pa.

**Aldrich 3-1/2" x 5" triplex pump, 316 stainless,** ceramic plungers, 30 HP vari-drive. Perry, 1415 N. 6th St., Phila. 22, Pa.

**Butlovak 2' x 7'-10" rotary vacuum dryer, 304** stainless, jacketed, Agit. 1953. Perry, 1415 N. 6th St., Phila. 22, Pa.

**Sturtevant Blenders 1/2-3/4 ton. Hardinge 4 1/2' by** 24" Conical Mill. J. H. Perkoski, Investment Bldg., Pittsburgh 22, Penna.

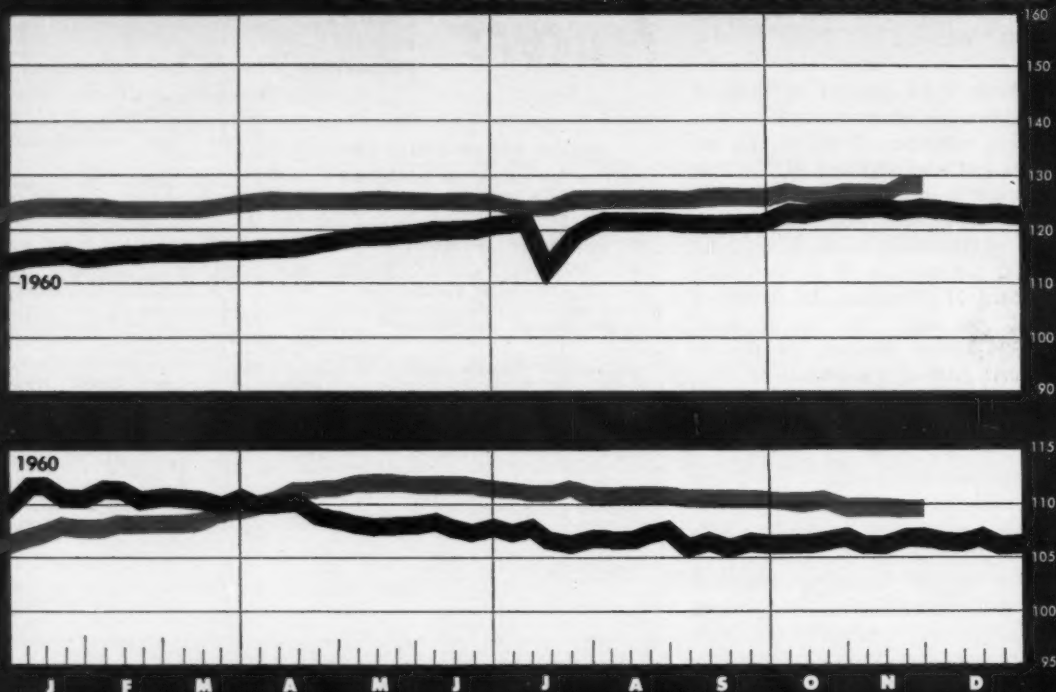
### PUBLIC AUCTION

**\$937,815.00 Evaluation-Chemical Mfg. & Process-** ing Plant. Sat., Dec. 16th at 11 A.M. Former property of Dale Chemical Industries, Inc. 20 mi. East of 29 Palms, Calif. to Dale Lake on Amboy Rd. (plant in operation less than 6 months . . . equipment nearly new, complete & in excellent condition) Rotary Dryer, direct-fired, parallel current type, 8' dia. x 60', complete w/all parts & accessories. 6 Miles of High Line and Poles. Digester Tanks & Settlers: 3' x 30' Dryer 3/4" conv. to Cooler. 38' high Cyclone, Tanks, Boilers. 100' Dorr Thickener-Mix Troughs. Multi-story plant bldg. & 3 bldgs. 61' and 70' Elevators & Conveyors. 2' to 18" Pipe & Valves-Slip Screens. Power House w/4 Diesel Engines, Generators. Heat Exchangers-Fuel Tanks. Pumps. Transformers. Office Equip. etc. Approx. 1800 acres land, mineral rights. For free brochure & further details, contact: Harry Engelson, Auctioneers, 4047 Wilshire Blvd., Los Angeles 5, Calif. DU. 3-7284.

### CHEMICALS WANTED

**Surplus Wanted—Chemicals, Pharmaceuticals** Oils, Acids, Plasticizers, Resins, Dyes, Solvents, Pigments, Etc. Chemical Service Corporation, 96-02 Beaver Street, New York 5, N.Y. HANover 2-6970.





NOVEMBER 25, 1961

## WEEKLY BUSINESS INDICATORS

	Latest Week	Preceding Week	Year Ago
Chemical Week output index (1957=100)	127.3	126.8	125.2
Chemical Week wholesale price index (1947=100)	109.4	109.3	107.3
Stock price index (12 firms, Standard & Poor's)	56.69	55.51	47.41
Steel ingot output (thousand tons)	2,046	2,044	1,468
Electric power (million kilowatt-hours)	15,520	15,396	14,505
Crude oil and condensate (daily av., thousand bbls.)	7,178	7,154	6,955

## TRADE INDICATORS

(Billion dollars)

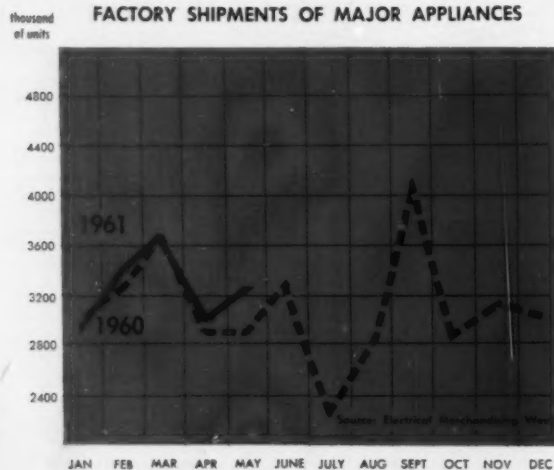
	Latest Month	Preceding Month	Year Ago
All manufacturing	31.47	31.46	30.09
Chemicals and allied products	2.54	2.57	2.30
Petroleum and coal products	3.22	3.22	3.20
Paper and allied products	1.19	1.18	1.09
Textile products	1.27	1.23	1.20

## MANUFACTURERS' SALES

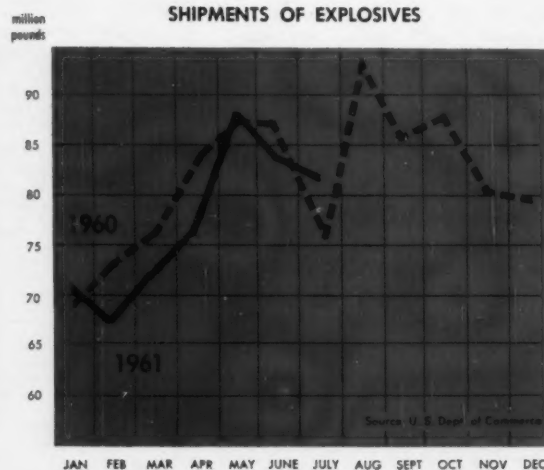
## MANUFACTURERS' INVENTORIES

## CHEMICAL CUSTOMERS CLOSE-UP

### FACTORY SHIPMENTS OF MAJOR APPLIANCES



### SHIPMENTS OF EXPLOSIVES





# Without petrochemicals how much of your wardrobe would vanish?

Whether it's your dacron shirt or your wife's nylon negligee, it is probably made from ethylene or cyclohexane. These are two of the many petrochemicals made by Gulf that put a secret ingredient in just about all your newest outfits — the drip-dry, the permanent pleat, the wrinkle-free, the warmth without weight, the soft as silk... even the look and feel of leather.

Ready-to-wear is just one of the many

industries that owes its lively market to petrochemicals. Toys, autos, packaging, home construction are a few others. If you're in chemicals, talk to Gulf. See how you can put new profits in your product — and your customers' — with Gulf petrochemicals. Write our Sales Office, 360 Lexington Ave., New York 17, N. Y.



#### QUALITY PETROCHEMICALS TO BEGIN WITH

Benzene • Cumene • Cyclohexane • Ethylene • Oxo Alcohols  
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# 2 Advanced New "Shippers" for General Chemical Acids

...safer,  
lighter,  
more  
convenient  
for you!



**1** New expanded polystyrene overpack for General Chemical's 13-gallon acid carboy. This new acid carboy overpack won the 1960 "Best of Show" award from the Society of Packaging and Handling Engineers. Here's why: underneath a rugged, wire-bound, wooden outer shell, inch-thick foamed-in-place polystyrene cushions General Chemical's 13-gallon commercial acid carboy. The new overpack is safer . . . protects the carboy from shock in shipping and handling. It's lighter . . . 40% less tare weight. It's smaller . . . increases shipping and storage capacity 30-35%.



**2** New expanded polystyrene case for Baker & Adamson® "C.P." Acids. An exclusive new development of B&A, this new one-way shipper cradles four 5-pint acid bottles in form-fitted pockets. Safer . . . meets the most stringent ICC drop test requirements. Light . . . weighs less than 11 pounds with empty bottles. Easy to handle and store . . . convenient finger grips make it easy to lift and carry . . . top and bottom interlock for safer stacking.

These two important new advances from General Chemical are typical of the advanced packaging introduced by General Chemical to protect the quality of its products. Call or write your nearest General Chemical office for information about availability of commercial and "C.P." acids in your area in these new, safer and more convenient packages.



**GENERAL CHEMICAL DIVISION**

40 Rector Street, New York 6, N. Y.



